A Comparative Analysis of the Wealth Effects to Target and Bidding Company Shareholders from Domestic and Cross-Border Acquisitions into the United Kingdom (1986-1991)

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1 Danbolt, J., (1995), "An Analysis of Gains and Losses to Shareholders of Foreign Bidding Companies Engaged in Cross-Border Acquisitions Into the United Kingdom, 1986-1991", *European Journal of Finance*, Vol. 1, pp. 279-309.

ABSTRACT

This thesis contains an analysis of the impact on shareholder wealth of domestic and cross-border takeover bids for UK listed companies. The study covers the calendar years from 1986 to 1991 inclusive. For the cross-border acquisitions, data is available for an analysis of 143 targets, 71 bidders, and 55 matched pairs of targets and bidders. For domestic acquisitions, data was available for 568 targets, 414 bidders and 356 pairs of targets and bidders. Three different event study methodologies are applied; the capital asset pricing model, the market model, and the index model.

UK target companies gained significantly from both domestic and cross-border takeover bids. Over the period from eight months prior, to one month after, the month of the bid announcement (t-8, t+1), cumulative abnormal returns exceeded +20.2% in cross-border and +16.6% in domestic acquisitions.

Both domestic and overseas bidders underperformed during the five month period following the bid announcement. However, over the whole analysis period (t-8, t+5), UK bidders performed significantly better than overseas bidders.

Analysis of joint abnormal returns to pairs of targets and bidders reveals that both cross-border and domestic acquisitions in the UK during the 1986-1991 period created significant shareholder wealth. However, the gains to target shareholders exceed the total gain, thus resulting in a transfer of wealth from bidders to targets.

DEFINITION OF TERMS

Before progressing further, it is worth defining some of the key terminology applied throughout this thesis. As argued by Brockington (1986), a merger is "the amalgamation of two or more businesses which were separate" (p. 80), while a takeover (also known as an acquisition) is "the acquisition of control of a company by another company. This is usually brought about by a purchase of the majority of its shares." (p. 115). While it is not uncommon to use the three terms synonymously (Weinberger *et al.* (1979), Schouller (1987) and OECD (1988)), other studies (e.g., Jensen and Ruback (1983) make a clear distinction). In this thesis, the terms *acquisitions* and *takeovers* will be used interchangeably where one company acquires control of another company (i.e., there is a clear buying and target company, as defined below), and *mergers* to refer to situations where two companies combine (i.e., there is no clear buying and target company).

The *buying* company is also referred to as the bidder, the predator, the acquiror, or the acquiring company. The *selling* company is alternatively known as the target, the victim, or the acquiree.

A *domestic* acquisition is where the buying and selling companies are incorporated in the same country, while a *cross-border* acquisition refers to a situation where the buying and selling companies are incorporated in two different countries.

The definition of *takeover bid* (also known as *takeover offer*) adopted in this study is the same as that used by Pringle: "A takeover bid is an offer to the holders of securities carrying voting rights in a company (or convertible into such securities) to acquire their securities for a consideration in cash or other securities for the purpose of acquiring control of the company ..." (Pringle (1991), p. 38). The day the formal bid (also known as the offer) is made, is the *announcement day*.

Abnormal return (AR) is a measure of the gains or losses to shareholders, during a specific time period, attributable to the *event* (which in this study is taken to be the

announcement of the takeover bid). The abnormal return is also known as the *shareholder wealth effect*, and is calculated as the difference between the actual return on the share, and the return one would expect had no event taken place. This is known as *event study methodology*, and involves the application of a *test model* such as the *capital asset pricing model*, the *market model*, or the *index model* for estimating the expected return. (These models are discussed in detail in Chapter 6). The test model *parameters* (such as the market model α and β) measure the historic relationship between return on the share and return on the market index, and are estimated during a *parameter estimation period.*

Cumulative abnormal returns (CAR) are the aggregate cumulative abnormal returns over a number of time periods, which together make up the *event window* (also known as the *test period*). Each time period is referred to relative to the time of the event (known as time period t[2]). Time periods prior to the event are indicated by a minus sign, while time periods after the event are indicated by a plus sign[3].

The *cross-border effect* is a measure of the difference in abnormal returns to companies engaged in cross-border and domestic acquisitions. A positive (negative) cross-border effect indicates that abnormal returns are higher (lower) in cross-border than in domestic acquisitions.

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2 In this study, based on monthly data, t refers to the calendar month in which the bid was announced. In studies based on daily data (as discussed in the literature review), t refers to the day of the bid announcement.

3 For example, as discussed in Chapter 6, the abnormal returns to target company shareholders are in this study calculated for a time period from eight months prior to the month of the bid announcement to one month after (event window = (t-8, t+1)), while the parameters are estimated using 60 monthly observation for the time period from 68 to 9 months prior to the month of the bid announcement (parameter estimation period = (t-68, t-9)).

INTRODUCTION

This thesis contains a comparative analysis of domestic UK acquisitions and cross-border acquisitions *into* the UK over the 1986 to 1991 period. The focus is on the wealth effect for bidding and target company shareholders, as well as on their combined wealth, from both cross-border and domestic takeover bids for UK listed companies.

Fatemi and Furtado (1988) gave three reasons why one might expect the level of abnormal returns to bidders and targets to be systematically different in cross-border and domestic acquisitions;

> "Transnational acquisitions would not be any different from domestic acquisitions, and therefore would not have any differential wealth effects, if
>
> (1) the market for corporate control were not segmented across national boundaries,
>
> (2) the capital markets were not internationally segmented, and
>
> (3) there were no net benefits (disadvantages) associated with international diversification.
>
> However, differential wealth effects may exist if any of these conditions do not hold." (Fatemi and Furtado (1988), p. 364).

While a substantial amount of research has analysed the wealth effect of *domestic* acquisitions, the existing literature on cross-border acquisitions seem to be more limited. However, several papers based on US data, such as Wansley *et al.* (1983), Tessema (1985), Shaked *et al.* (1991), Harris and Ravenscraft (1991), Cebenoyan, *et al.* (1992), Swenson (1993), and Cheng and Chan (1995), have suggested that target company shareholders gain more in cross-border than in domestic acquisitions. This has become known as the target company 'cross-border effect'. Prior to this study, no similar research appears to have been undertaken based on the UK market. Indeed, it appears that only two previous studies, Conn and Connell (1990, 1993) and

Feils (1993), have looked specifically at cross-border acquisitions into the UK. However, with regard to their analysis of acquisitions into the UK, both studies were rather narrow in focus, as neither study analysed the effect of cross-border acquisitions into the UK by companies based outside the US, nor did they analyse domestic acquisitions for comparison purposes. Consequently, neither Conn and Connell (1990, 1993) nor Feils (1993) were able to comment on the presence or otherwise of a target company cross-border effect in the UK. This study aims to fill this gap in the existing literature.

In addition, this thesis contains an analysis of the abnormal returns to the overseas and domestic bidding companies. In competitive takeover markets, one would expect target company shareholders to capture most of any gain from acquisitions, with the level of abnormal returns to bidding company shareholders being close to zero (Marr *et al.* (1993)). However, if target company shareholders are found to receive higher premiums in cross-border than in domestic acquisitions, can this be attributed to the target companies being worth more to overseas bidders than to domestic bidders, or do foreign bidders pay too much? By analysing the level of abnormal returns to shareholders of both overseas and domestic bidding companies, as well as the differences in their returns, this study will cast light on this issue.

An analysis of target and bidding company shareholders separately, will not necessarily (unless both target and bidding company shareholders are found to either gain or lose) give an indication of whether or not takeover bids *overall* create or destroy shareholder wealth. Consequently, a further area of research undertaken in this study is an analysis of the combined abnormal returns to pairs of target and bidding company shareholders in both cross-border and domestic acquisitions.

The research centres around the takeover bids for UK listed companies which were announced on or after 1 January 1986, and for which the bid outcome was

known on or prior to 31 December 1991[4]. For this 6 year time period, a total of 966 such takeover bids were identified; 208 (21.5%) by foreign entities, 756 (78.3%) by British institutions, and 2 (0.2%) joint bids between domestic and overseas companies.

The aim of this study is to analyse the returns to shareholders of both target and bidding companies in all the cross-border and domestic acquisitions subject to certain exceptions detailed in Chapter 6. However, due to data limitations (due to not all companies being listed, or insufficient share return data being available for an analysis of certain companies), such a complete census analysis is not possible. Data is available for 143 UK target companies and 71 overseas bidding companies in cross-border acquisitions into the UK. Data is available for both targets and bidders in 55 cross-border acquisitions. With regard to domestic UK acquisitions, sufficient data for analysis is available for 568 target and 414 bidding companies. Data is available for pairs of targets and bidders in 356 domestic acquisitions. A full listing of the takeover bids and the companies involved are provided in Appendix A for cross-border acquisitions, and Appendix B for domestic transactions (Appendices are located at the end of the thesis).

This study thus contains an analysis of the impact of acquisition announcements on the wealth of shareholders in 1,196 companies engaged in domestic and cross-border acquisitions into the UK during the 1986-1991 period. It is appreciated that acquisitions have implications far beyond the wealth of the shareholders of the companies involved. However, an analysis of the impact of acquisitions on other stakeholders, such as employees, managers, customers, suppliers and the wider economy, is beyond the scope of this thesis.

Chapter 1 contains a brief discussion of the level of takeover activity in the UK, with particular reference to the takeover boom of the late 1980s. During the time

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4 As discussed in Chapter 6, a complete set of *Acquisitions Monthly* (which is the source applied for information on the bid announcements), was not available prior to 1986, while the 1991 cutoff coincides with the start of this research project. However, as discussed in Chapter 1, this six year period is also of particular interest due to the high level of both domestic and cross-border takeover activity in the UK.

period of analysis in this study (1986 to 1991), a significant feature of the UK takeover market was the high (and increasing) level of cross-border acquisitions of UK companies.

The main aims of this study are to establish whether target and bidding company shareholders gain from domestic and cross-border takeover activity, and to ascertain whether the level of abnormal returns are different in cross-border and domestic acquisitions. However, prior to the empirical analysis, it is worth considering some of the theoretical arguments put forward as to *why* the level of abnormal returns to target and/or bidding company shareholders may be systematically different in national and transnational acquisitions. A discussion of such factors is contained in Chapter 2. The variables considered include product market imperfections, government intervention and regulation, capital market imperfections, segmented takeover markets and international risk diversification. These variables provide *some* of the possible explanations for the cross-border effects observed in this study. It is worth stressing, however, that while this thesis sets out to establish *if* cross-border effects exist in the UK (and whether these effects persist after controlling for some of the key characteristics of the bids), this thesis does *not* attempt to test any of the theories regarding the causes of such cross-border effects empirically. Indeed, as discussed in Chapter 2, these theories are generally not empirically verifiable, and while the empirical results in this study may lend support (or otherwise) to some of these theories, formal testing has not been possible.

Some of the key literature regarding the impact of domestic acquisitions, is reviewed in Chapter 3. While the main focus of this thesis is on takeover activity in the UK, a discussion of studies based on the US has also been included. The US is not only the largest takeover market in the world, but it was also the single most important country with regard to cross-border acquisitions into the UK during the 1986-

1991 period[5]. Consequently, an awareness of the impact of domestic acquisitions in the US will aid the analysis of takeover activity in the UK during the 1980s. While target company shareholders appears to gain significantly in both markets, there is some evidence to suggest that the abnormal returns to US bidders are superior to those observed for UK bidders. However, controversy surrounds the area of returns to bidders, and as stressed in the chapter, comparisons are fraught with difficulties due to the different methods applied by different authors.

The existing literature on the shareholder wealth effects associated with cross-border acquisitions is reviewed in Chapter 4. The analysis to date tends to be heavily skewed towards the US market, with 21 of the 34 previous studies identified focusing exclusively on the US companies (targets, bidders, or both) involved in takeover activity. Consequently, there appears to be only 13 previous studies of cross-border acquisitions which have included data for companies based outside the US. While the US is the largest takeover market in the world, another motive for restricting the analysis to this market may have been the difficulties involved in obtaining return data for companies based in other countries. The majority of studies suggest that, at least for acquisitions in the US, target company shareholder returns are higher in cross-border than in domestic acquisitions.

The hypotheses tested in the empirical section of this thesis, are discussed in Chapter 5. The hypotheses relate to the timing, the level, and the differences in the levels of abnormal returns to targets, bidders, and pairs of target and bidding companies in cross-border and domestic acquisitions. It is further hypothesised that the level of abnormal returns will be influenced by the characteristics of the bid, such as the bid outcome, the existence of competition in the bid, the revision of bid terms, the method of payment, the presence of pre-bid stakes in targets by bidders, the relative size of the target and bidding companies, and the size of the company in

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5 Acquisitions into the UK by US bidders account for approximately 22% of the cross-border acquisitions analysed in this study.

question.

Chapter 6 contains a discussion of the data sources and methodology applied in the empirical part of the thesis. During the period of analysis, 208 cross-border and 756 domestic takeover bids for listed UK companies were announced. A few offers were rejected from the analysis, due to their unusual characteristics. However, while the aim was to analyse the impact of the bids on the wealth of both target and bidding company shareholders in virtually all the domestic and cross-border bids, this proved impossible due to data limitations. In particular, lack of data was a problem with regard to the overseas bidding companies. However, by contacting various stock exchanges and companies directly, data was obtained for 71 overseas bidders from 14 different countries. Data was also available for 143 UK target companies in cross-border acquisitions. In order to ascertain whether takeovers *overall* create wealth, data for both targets and bidders is required. In 55 of the cross-border acquisitions was data available for matched pairs of bidders and targets. With regard to the domestic acquisitions, data was available for 414 bidders, 568 targets and 356 pairs of targets and bidders.

The analysis in this thesis is based on event study methodology. Three different models are applied for establishing the level of abnormal returns to targets and bidders, as well as for ascertaining the degree of difference in abnormal returns to companies involved in cross-border and domestic acquisitions. These are the capital asset pricing model, the market model, and the index model. (The cross-sectional analysis as well as the analysis of joint abnormal returns to pairs of targets and bidders is restricted to the index model abnormal returns). Parameters are estimated using monthly data for a five year period from 68 to 9 months prior to the month of the bid announcement (months t-68 to t-9, where t refers to the month of the bid announcement), while abnormal returns have been calculated from t-8 to t+5 for bidders and from t-8 to t+1 for targets and pairs of targets and bidders. The degree of statistical significance of the abnormal return estimates are calculated using the *t*-

test for the capital asset pricing model and the index model, while the market model returns are also tested using the Patell Standardised Residuals test. Cross-border effects have been tested using the *t*-test for differences in means.

Chapter 6 also contains a discussion of the methodological difficulties encountered in this study. These problems include parameter estimation complications and 'thin' trading, stock market size effects, establishing the level of bidding company returns, and post-announcement 'drift' in abnormal returns to bidders.

The empirical results are discussed in the following three chapters. Chapter 7 contains an analysis of returns to target company shareholders. Target companies in both cross-border and domestic acquisitions gained significantly from the bids. The average abnormal return over the period from t-8 to t+1 exceeded +20% in cross-border acquisitions and +16% in domestic acquisitions. While target company shareholders gained more in cross-border than in domestic acquisitions, the target company cross-border effect was generally not statistically significant. There were, however, large variations in the level of returns to shareholders of different target companies, with the level of abnormal returns being influenced not only by the nationality of the bidder, but also by the characteristics of the bid. For example, shareholders of UK target companies subject to cross-border takeover bids gained significantly more in acquisitions by companies based outside the EC, while both sets of target companies gained more where the bid included a full cash offer. The target company cross-border effect appear to have been due to the higher proportion of cross-border than domestic acquisitions involving a full cash alternative. Indeed, the target company cross-border effect was no longer present once the method of payment was controlled for.

The abnormal returns to shareholders of the bidding companies are analysed in Chapter 8. Shareholders of overseas bidding companies lost as a result of their companies' cross-border bids for UK listed companies, particularly during the months following the bid announcement. The level of these losses were, however, highly

dependent on the test model applied. With the index model[6], cumulative abnormal returns (for the time period from t-8 to t+5) amounted to -5.34%. (The losses were substantially larger, at -16.46%, using the market model). The negative abnormal returns were particularly large for companies based in European countries who were not members of the European Union.

The results for the domestic bidders are somewhat difficult to interpret, as the models provide conflicting results. The index model suggests that domestic bidders gained significantly prior to the bid, while encountering marginal abnormal losses after the bid. (The market model indicates that large losses accrued to shareholders of UK bidders). However, regardless of which model is applied, overseas bidding companies are found to have performed significantly worse than domestic bidders. The negative bidding company cross-border effect exceeds 11 percentage points. This cross-border effect remains highly significant even when the different bid characteristics are taken into account in the cross-sectional analysis. The generally poor performance of both domestic and cross-border bidders over the period following the bid raise questions regarding the merit of, and the motivation underlying, these transactions.

The joint abnormal returns to target and bidding company shareholders is analysed in Chapter 9. Due to the generally much larger size of bidders than targets, the abnormal return for each pair is weighted according to the relative market values of the bidding and target companies. The results (using the index model for the period from t-8 to t+1) reveals that both cross-border and domestic acquisitions created highly significant shareholder wealth, with cumulative abnormal returns of +5.19% and +8.08% in cross-border and domestic acquisitions, respectively. Thus, while target company shareholders gained more in cross-border than in domestic acquisitions, this

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6 As discussed in Chapter 6, the index model is believed to be the preferable model. Not only does this model allow for the analysis of a larger sample than either the capital asset pricing model or the market model (due to the less stringent data requirements), but also avoids some of the parameter estimation problems encountered in this study (see section 6.5.1). As reported in Table 6.6, the average β value (using either CAPM or the market model) is substantially below 1. This raises questions regarding the reliability of these estimates. In addition, the average market model α for bidding companies were high, indicating that the parameter estimation period, despite ending 9 months prior to the bid announcement, may not have been a period of 'normal' returns.

was more than offset by the negative abnormal returns to overseas bidders. The negative overall cross-border effect was not, however, statistically significant.

A discussion of the key findings and the conclusions of the thesis are provided in Chapter 10.

CHAPTER 1

CROSS-BORDER AND DOMESTIC TAKEOVER ACTIVITY IN THE UK DURING THE 1980s

1.1. Summary

The level of takeover activity in the UK rose rapidly during the latter half of the 1980s. Cross-border acquisitions into the UK contributed significantly to this takeover boom, and in 1990 (when domestic takeover activity fell sharply), the value of acquisitions of UK companies by foreign entities exceeded the value of domestic transactions. (Business Briefing (1991a-1994b).

1.2. Introduction

Cross-border takeover activity within Europe rose rapidly after the passing of the Single European Act in 1985, as companies prepared themselves to operate on a pan-European basis in a single market. Sir Leon Brittan, Vice-President of the European Commission, stressed the importance of acquisitions for the success of the single market:

> "As we move towards the completion of the Community's internal market, the future structure and competitiveness of European industry depend largely on companies' plans for mergers, acquisitions and other lasting forms of cooperation..." (as reprinted in Pringle (1991), p. 24).

Companies in the United Kingdom played an important part in the cross-border takeover boom of the late 1980s, both as buyers of foreign companies, and as recipients of bids from overseas companies. (Gray and McDermott (1988), Hippe (1990), and Vernon (1993)).

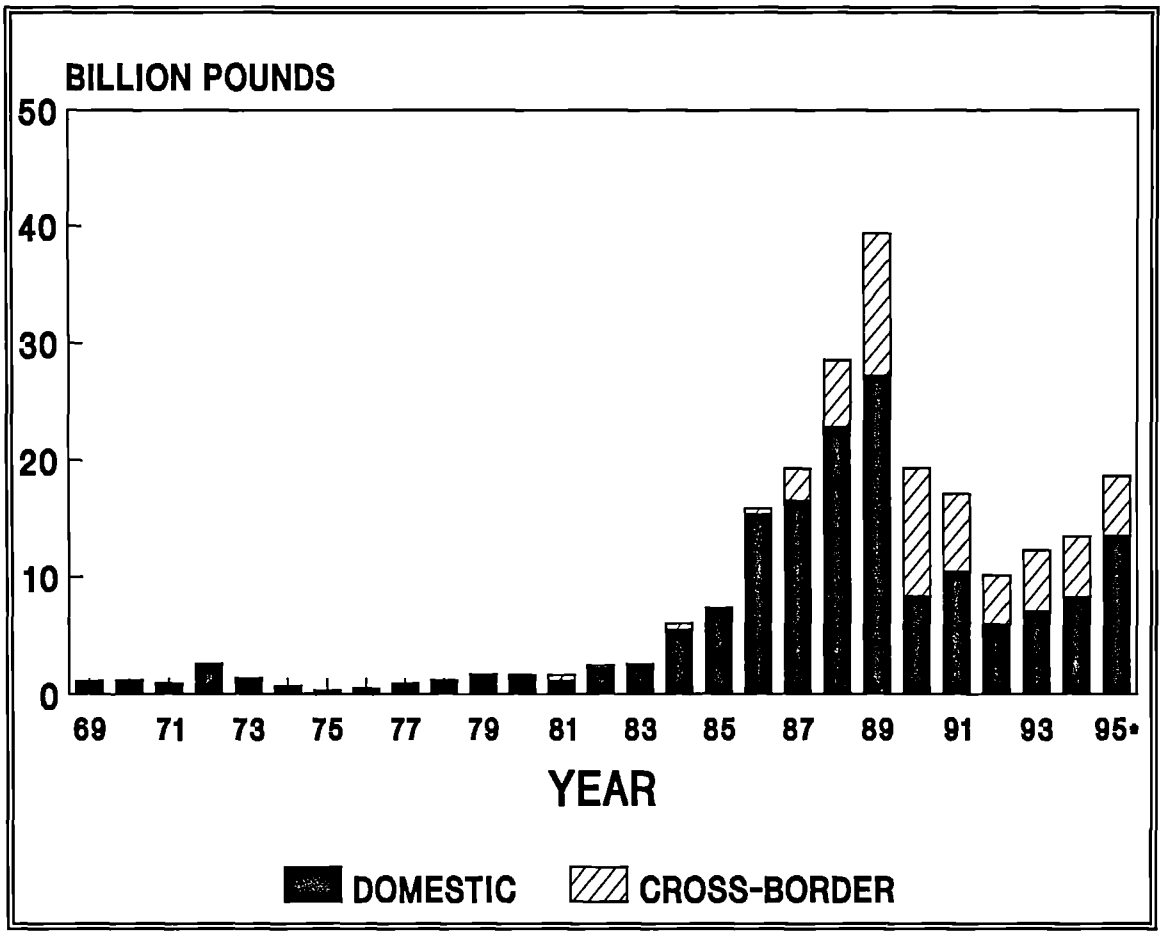
1.3. Takeover activity in the UK

The level of takeover activity in the UK grew rapidly during the late 1980s. The

Figure 1.1

Total Value of Mergers and Acquisitions in the United Kingdom - Domestic and Cross-Border 1969 - 1995*

* Data for 1995 restricted to first six months.
Expenditure on initial payments for acquisitions and mergers by industrial and commercial companies within the UK compared to value of cross-border acquisitions and mergers in the UK by overseas companies. The values include payment in complete acquisitions for both private and public UK companies. The values have not been adjusted for inflation. Source: Cooke (1988), Business Briefing (1991a-1994b), and CSO (1995).



total value of acquisitions of companies in the UK rose from approximately £2.5 billion in 1983 to a peak of just under £38 billion in 1989. As can be seen from Figure 1.1, to a large extent this takeover boom was fuelled by cross-border acquisitions into the UK. From 1988 onwards, cross-border takeovers have accounted for at least 20% of the total value of takeovers in the UK. Indeed, in 1990, takeovers by foreign entities accounted for 58% of the total value of acquisitions in the UK.

Several researchers (e.g., Crook (1995), Dewenter (1995b) and Simpson (1996)) have attempted to explain the volatile nature of takeover activity. Brealey and Myers

(1988) argued that periods of intense acquisition activity "...coincided with a period of buoyant stock prices... [Peaks in takeover activity] must somehow be associated with high stock prices" (p. 817)[7]. Other factors which have been found to have an importance, particularly on the level of cross-border takeover activity, include product market imperfections, government regulation and regulatory policies, and capital market imperfections. These factors are discussed in Chapter 2. However, it should be noted that the focus of this thesis is on the wealth effects associated with domestic and cross-border acquisitions, not on the motives underlying acquisitions or on the cyclical nature of takeover activity.

1.4. Conclusion

During the late 1980s, there was a major increase in the value of takeover activity in the UK. A significant feature of this takeover boom, was the increasing importance of cross-border acquisitions into the UK. Indeed, in 1990, the value of such cross-border acquisitions exceeded the value of domestic UK takeovers. However, despite the significant scale of cross-border acquisitions into the UK during the 1980s takeover boom, little is known regarding the impact of these transactions on the wealth of the shareholders of the companies involved. This study aims to fill this gap.

In the following chapter, some of the motives for cross-border acquisitions, and some of the factors which may cause the impact on shareholder wealth to be systematically different in domestic and cross-border acquisitions, are reviewed.

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7 Analysis (based on data from Datastream and Business Briefing) of correlation coefficients between the percentage annual change in the level of the FT All Share Index and the value of completed acquisitions in the UK during the 1970 to 1993 period confirm that takeover activity is associated (although fairly weakly) with the level of the stock market index (correlation coefficient between overall takeover activity in the UK and the stock market index was +0.111). However, while a positive correlation coefficient was observed for domestic acquisitions (+0.167), the value of cross-border acquisitions into the UK was negatively correlated with the stock market index (-0.311). From this (admittedly limited) analysis, it thus appear that overseas bidders became more active when UK share prices were falling. A full analysis of the causes for the correlation (whether positive or negative) between the level of the stock market index and the level of takeover activity is, however, beyond the scope of this research.

CHAPTER 2

FACTORS WHICH MAY CAUSE WEALTH EFFECTS TO BE SYSTEMATICALLY DIFFERENT IN CROSS-BORDER AND DOMESTIC ACQUISITIONS.

2.1. Summary

This chapter contains an overview of some of the complications involved in cross-border acquisitions, and a discussion of factors suggested in the literature as being driving forces motivating companies to acquire abroad. The areas of motives (which potentially may help explain why cross-border and domestic acquisitions may be associated with differential wealth effects) reviewed in this chapter are product market imperfections, government intervention and regulatory policies (including issues regarding market access and taxation), capital market imperfections (in particular, factors regarding exchange rates and price/earnings ratios), segmented takeover markets and international risk diversification. As indicated in the chapter, the motives are generally not mutually exclusive, and empirical analysis is fraught with difficulties. The existing 'evidence' is generally inconclusive, and the cause of cross-border effects still remain a controversial issue.

2.2. Introduction

As explained by Feils (1993), "in the domestic mergers and acquisitions literature, firm-value maximization, managerial self-interest, and hubris have been well established as motives for mergers and acquisitions".[8] (p. 3). These factors may also act as motives in cross-border acquisitions. This chapter, however, will focus on the

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8 For a discussion of managerial self-interest in acquisitions, see e.g., Jensen (1986a and 1986b), Weidenbaum and Vogt (1987), Allen and Cebenoyan (1991), Firth (1980 and 1991), and Petry and Settle (1991). Firth (1991), for example, found the management of bidding companies to gain significantly from acquisitions, even when the transactions resulted in losses to bidding company shareholders. With the separation of ownership and control, there is a danger of agency conflict (Berle and Means (1932)). Petry and Settle (1991), however, argued that their results "...fail to manifest an agency problem". (p. 99). The hubris hypothesis (that bidders pay too much due to overconfidence) was developed by Roll (1986). A related theory is the 'winners curse' hypothesis, as discussed by Varaiya (1988).

differences between domestic and cross-border acquisitions, with the aim of establishing potential reasons as to why abnormal returns to target and/or bidding company shareholders may be systematically different in domestic and cross-border acquisitions. This is done by reviewing some of the difficulties associated with cross-border acquisitions, as well as some of the main motives for cross-border acquisitions suggested in the literature[9].

2.3. Difficulties encountered in cross-border acquisitions

There are several potential advantages of cross-border acquisitions, as discussed in section 2.4. However, there are also numerous problems which are likely to make cross-border acquisitions more time consuming and costly to execute than domestic acquisitions.

Prior to launching a cross-border bid, it is important that not only the target company be analysed in depth; the *country* in which the target is based also needs to be studied in detail. With reference to international *investment*, Cooke (1988) argued that when contemplating foreign direct investment (FDI) such as international acquisitions,

> "... a whole new range of decisions must be made which do not have a domestic counterpart, including:
>
> 1. The raising of funds in one market for investment in another. ...
> 2. Additional complexities of exchange rate changes on the value of assets.

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9 The aim of this chapter is to establish some of the potential causes for differential wealth effects being associated with cross-border and domestic acquisitions. Consequently, a full review of takeover motives in general (which are common to both domestic and cross-border acquisitions) will not be discussed in this chapter. See Steiner (1975), Goldberg (1983), Cooke (1986), Brealey and Myers (1991) and Pike and Neale (1993) for a discussion of such motives, which include economies of scale, economies of scope (synergies), exploitation of unused tax shield, acquisition of key resources, growth, elimination of inefficiencies, as well as "...dubious reasons..." (Brealey and Myers (1988), p. 799) such as diversification, inflate earnings per share, and lowering financing costs.

3. The dangers that even if the project is successful, a foreign government may not have sufficient foreign exchange to permit the remittance of capital, dividends, interest, fees or royalties.
4. The complexities of assessing economic and political framework of the host country and the probability of changes in that environment.
5. The danger of expropriation of assets by a foreign government.
6. Managing businesses which are a considerable distance from head office. ...
7. Tax complications, including discrimination against cross-border transactions. ...
8. The problems of assessing financial information on a global basis...
9. The problem of investing in a country which has substantial government control over foreign investment. ...
10. Specific exchange control regulations constraining cross-border transactions.
11. Problems generated by operating in an overseas country such as language, customs and communications.
12. Legal barriers between countries which make it difficult to integrate an overseas investment successfully.
13. A consideration of which capital markets to raise funds from.
14. A consideration of debt/equity ratios (thin capitalization) which may be imposed by foreign governments." (Cooke (1988), pp. 5-6).

While not all of these factors may be of significance for acquisitions into a stable, developed country such as the UK, most of them still need to be considered.

Brown and MacLachlan (1991) added the complexity caused by different legislative regimes operated by different countries;

> "The company buying in another country often faces unfamiliar acquisition and tender rules that diametrically clash with the scheme in its homeland. Satisfying two or more jurisdictions to complete a deal requires deft legal strategy or accommodation from regulators case by case". (p. 57).

The complications of international acquisitions[10], as outlined above, are likely to make such transactions significantly more time consuming (and expensive) to plan and implement than domestic acquisitions. Indeed, as argued by Feils (1993),

> "a foreign firm will have larger transaction costs to combine the two firms than a domestic firm given that a domestic firm has an inherent advantage over a foreign firm due to its knowledge of the local language, culture, and business environment. The agency costs of monitoring and bonding ... are likely to be higher for multinational firms than for purely domestic firms given the geographical and cultural distance between the acquiring and the target firm". (p. 11).

In Chapter 4, it can be seen (e.g., Table 4.2) that the majority of studies (generally focusing on the US) have found target companies to gain more when the bidder was foreign compared to when the bidder was a domestic firm. However, if, as argued by Cooke (1988), cross-border acquisitions are so complicated to carry out, why do they take place at all, and indeed, why are foreign bidders prepared to offer such high takeover premia for their target companies considering the high cost of mounting international bids? Feils (1993) argued that "foreign acquiring firms, whose goal is the maximization of firm value, must ... have some unique international advantages in order to be able to offset the inherent advantages of the domestic firms". (p. 12). As mentioned above, the acquisitions literature offers a vast range of plausible motives for takeovers. This chapter, however, sets out to discuss the motives or 'unique international advantages' associated with cross-border acquisitions.

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10 Coopers and Lybrand (1989) provides a detailed analysis of the specific problems relating to cross-border acquisitions into the various EC countries.

2.4. Possible advantages derived from cross-border acquisitions

A number of possible motives for cross-border acquisitions have been identified in the literature. For example, Weston, Chung and Hoag (1990) discussed ten different motives for international acquisitions. These are

1. Market growth,
2. Technology exploitation,
3. Product differentiation,
4. Government policy circumvention,
5. Exchange rate risk reduction,
6. Political and economic stability,
7. Cheaper labour costs and/or more efficient labour,
8. Following clients,
9. Business diversification, and
10. Seeking resources.

For a further discussion of motives for cross-border acquisitions, see e.g., Khoury (1980), Ajami and Ricks (1981), Kish and Vasconcellos (1993), and Vasconcellos *et al.* (1990).

While these motives are interesting (and some will be covered in the discussion below), they do not generally on their own help explain why abnormal returns may be systematically different in domestic and cross-border acquisitions. In the literature on cross-border acquisitions, several explanations for cross-border effects have been suggested, such as

- imperfections or costs in product or factor markets,
- government intervention and regulatory policies,
- differences in capital markets,
- differences in takeover markets, and
- effects of international risk diversification (Fatemi and Furtado (1988), Harris and Ravenscraft (1991)).

These factors are discussed below in sections 2.4.1 to 2.4.5.

2.4.1. Product market imperfections

A potential motive for cross-border acquisitions may be to enter markets perceived to have a cost advantage due to cheaper raw materials, lower costs of production, and cheaper and/or more efficient labour (Weston *et al.* (1990)). Calvet (1981) put forward that "...foreign direct investment would flow from high-labor-cost countries to low-cost countries in the pursuit of cost minimization". (p. 45). However, as argued by Kindleberger (1969),

> "...cheaper costs abroad than at home are not enough. What must be explained is why production abroad is not undertaken by local entrepreneurs, who have an inherent advantage over outside investors. There must be a more than compensating advantage on the part of the foreigner before direct investment will be called forth". (p. 13).

Rugman (1975) elaborated, and argued that,

> "the advantage possessed by the multinational firm must be a true monopoly advantage, that is, one which cannot be acquired by host country firms... The multinational firm has the difficulty and expense of being far removed from the local market... To summarize, if there were perfect competition in the market for goods and factors there would be no direct investment." (p. 569).

A similar view was expressed by Hymer (1976), who argued that "if we wish to explain direct investment, we must explain control". (p. 23). Foreign direct investment, of which cross-border acquisitions is one form, tends to be motivated by the wish to exploit a unique, firm specific asset or ability which can not easily be exploited without direct investment (Hymer (1976), Weston *et al.* (1990)). "If the market is imperfect, the owner may not be able to appropriate fully the returns to the ability unless he controls its use". (Hymer (1976), p. 26).

> "There may be other considerations: whether the patent or industrial secret is adequately protected by the license, or whether at the expiration of the agreement the licenser will find his secret gone; possibilities which it might be illegal to protect against through agreement but which are safeguarded through ownership". (Kindleberger (1969), p. 18).

If any of these issues are of serious concern, the company may wish to acquire abroad rather than to licence the intangible asset to others. While cross-border acquisitions *may* be undertaken in order to exploit product market imperfections, there is little empirical evidence to suggest that this is a major factor.

Product diversification through cross-border acquisitions is uncommon (Caves (1971) and Shore (1990)). According to Caves (1971), "...a firm would not invest abroad while profitable opportunities remained for the exploitation of scale economies in production or sales in the home market". (p. 12). Economies of scale are often cited as a major motive for domestic acquisitions (Brealey and Myers (1991)). However, despite cross-border acquisitions being mainly horizontal (Shore (1990)), "arguments from economies of scale - a common justification for domestic mergers - are not important motives for foreign direct investment". (Pringle (1991), p. 9). In addition, research by Jacquemin *et al.* (1989) on cross-border acquisitions within the EC revealed little evidence to suggest that these transactions resulted in greater efficiencies or that economies of scale or monopoly powers were exploited.

It has not been possible in this thesis to test the degree to which product market imperfections have acted as a motive for the cross-border acquisitions studied. Such an analysis would require a very detailed analysis of each individual transaction in order to establish what special advantages each overseas bidder possessed. Such data was not available in this study, which is based on a large scale statistical analysis. If cross-border acquisitions have been undertaken in order to exploit some specific advantage, one would expect the overseas bidders to gain from their cross-border acquisitions into the UK. However, while the presence of positive abnormal

returns to bidders would be consistent with the predictions of the product market hypothesis, the presence of such abnormal returns would not be sufficient to verify the theory, as other factors may influence the level of abnormal returns.

2.4.2. Government intervention and regulatory policies

A further category of market inefficiencies of potential relevance to cross-border acquisitions, relates to government intervention and regulatory policies. Pringle (1990) argued that,

> "the motives behind FDI are different from those usually said to justify domestic mergers. ... FDI into industrial countries has always been dominated by ... [one] motive, i.e. market access." (p. 9).

The need for market access would generally not be a sufficient motive to warrant cross-border acquisitions if domestic markets were fully open to unrestricted import or export. However, due to government intervention, foreign markets may not be fully accessible without direct investment. A possible objective of international acquisitions, may be to circumvent government policy. With regard to cross-border takeovers, market access and taxation policies are probably the two most important areas influenced by government policies (Weston *et al.* (1990)).

a) Market Access

International takeovers may be motivated by a need to operate locally to avoid (perceived or real) trade barriers. This appears to have been an important issue in the cross-border takeover activity in Europe during the late 1980s. During this period, particularly non-EC European companies were actively acquiring companies within the community before the introduction of the Single Market[11]. At the time there appeared to be a common fear of the EC turning into a 'Fortress Europe'.

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11 As is discussed in Chapter 6, while US companies were the largest single group of bidders for UK listed companies, a large number of cross-border acquisitions into the UK over the 1986-1991 period were also made by companies based in e.g., Sweden and Switzerland.

> "Moves to create a well functioning internal market in Europe are, it is often thought by outsiders, part of a hidden agenda that will inevitably lead to policies creating a Fortress Europe. As internal barriers go down, so external barriers may, it is feared, rise. The distinction between "us" and "them" can lead to a situation in which "they" are excluded from "our" markets." (Geroski and Vlassopoulos (1990), p. 23).

A similar view is expressed by Hannah (1990), who argued that,

> "the pressures of 1992 will intensify both intra-European merger activity and overseas interest in gaining a foothold inside 'Fortress Europe' or whatever liberal regime emerges." (p. 161).

This may help explain the rapid increase in takeover activity, and particularly cross-border takeovers, into the UK during the late 1980s (as depicted in Figure 1.1).

It is unclear what impact the need for market access will have on the relative levels of abnormal returns in domestic and cross-border acquisitions. It may be anticipated, however, that market access is so important to bidders based outside the EC that they are prepared to pay higher takeover premiums for UK targets than are domestic bidders (or cross-border bidders based inside the EC). If so, one would expect target company abnormal returns to be higher in cross-border acquisitions by non-EC bidders than in acquisitions by other bidders. Thus, there is a possibility that the level of abnormal returns to UK target companies in cross-border acquisitions will differ depending on whether the overseas bidder was located inside or outside the EC. This issue is analysed in Chapter 7.

If market access is valuable (and is recognised as such by shareholders), overseas bidding companies may still experience positive abnormal returns (or at least equal or superior abnormal returns to those observed for local bidders), even if paying a higher premium for their takeover targets. The abnormal returns to bidders is analysed in Chapter 8.

b) Taxation

Tax issues are likely to be a factor in cross-border acquisitions. A full discussion of the complex tax issues related to such transactions is outwith the scope of this thesis[12].

By operating in more than one country, profits may (as far as local tax legislation permits) be transferred between countries in order to minimise total tax liability for the group as a whole. This may give the international company a tax advantage.

With regard to the US market, Scholes and Wolfson (1990) argued that the tax reforms of 1981 and 1986 were likely to have had a different impact on the fortunes of domestic and cross-border bidders. It was argued that the 1981 Economic Tax Recovery Act "...imposed many ... taxes that put foreign investors at a disadvantage". (Servaes and Zenner (1990), p. 5). The 1986 Tax Reform Act redressed some of this discrimination and, according to Scholes and Wolfson, reduced the bias against foreign bidders.

As discussed further in chapter 4, researchers such as Servaes and Zenner (1990), Manzon *et al.* (1994), Dewenter (1995a) and Doukas (1995a) found some support for the tax argument[13]. However, such findings were not uniform. For example, Harris and Ravenscraft (1991) and Markides and Ittner (1994) did not find changes in the US tax system to be of importance in their analysis.

Although the standard rate of corporation tax in the UK has been and still is fairly high[14], there are numerous legal ways of reducing the tax bill. Foreign bidding companies may still find advantages in the UK tax system, as

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12 For a good and brief discussion of the tax implications of acquisitions in various countries, refer to Karls, (1992).

13 Servaes and Zenner found US target companies in cross-border acquisitions to gain more when the US tax system was favourable to foreign bidders (pre 1981 and post 1986). However, while the finding of a fall in abnormal returns after 1981 and an increase after 1986 is consistent with the tax explanation, there is a possibility that this time variation was not caused by the changing tax laws, but rather by some other, as yet unspecified, variable related to time. Thus, while the level of abnormal returns appear to be correlated to the US tax regime operated at the time, one should be careful in inferring causation.

14 The standard rate of corporation tax in the UK was reduced from 40% in 1985 to 35% in 1986. The rate was further reduced to 34% in 1990 and to 33% in 1991, which is the rate still applicable today. (Parrington (1995), p. 28).

> "... the UK has the largest network in the world of taxation agreements with other countries. These agreements, among other things, reduce or eliminate tax on dividend, royalty and other types of payment between countries." (Blackstone, Franks and Thakrar (1986), p. 1).

In their report, Blackstone *et al.* (1986) argued that the UK could be used successfully by foreign companies as a tax haven.

> "The UK has been used as a tax haven ... for many years, in order to shelter, completely free of tax, profits earned outside the UK. In this respect, it is undoubtedly the finest "pure" tax haven in the world." (Blackstone *et al.* (1986), p. 1).

Thus, it does not seem likely that the British tax system will deter foreign companies from acquiring companies in the UK. However, little evidence seems to be available suggesting the UK tax system *attracts* overseas bidders to the UK.

If overseas bidders have tax advantages (or disadvantages) relative to domestic bidders, this may help explain why differential wealth effects may be encountered by domestic and overseas bidders. It is less clear how such tax advantages or disadvantages may affect the level of abnormal returns to target company shareholders. While a tax advantage may give an overseas bidder a financial advantage relative to local bidders, it is unclear if and why overseas bidders would pass (part or all) of this tax advantage on to target company shareholders.

The impact of tax regimes on the relative level of abnormal returns to target and bidding company shareholders from domestic and cross-border acquisitions thus remains to be fully determined. This study contains an analysis of overseas bidding companies based in 14 different countries, and UK target companies acquired by companies based in 22 different overseas countries[15]. An analysis of the impact of taxation on the level of abnormal returns to targets and bidders in cross-border

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15 As discussed in Chapter 6, the difference in the number of countries covered in the analysis of cross-border targets and cross-border bidders, is due to the different sample sizes, caused by data limitations.

acquisitions into the UK would thus require a detailed analysis of the tax regimes in these countries (including any changes during the 1986 to 1991 period), as well as a study of any tax treaties between the UK and the overseas countries. Such an analysis has not been pursued in this study, although this is an area which could benefit from further research.

2.4.3. Capital market imperfections

The third category of motives for cross-border acquisitions is related to imperfections and asymmetries in capital markets (Harris and Ravenscraft (1991)). In particular, variations in exchange rates and differences in price/earnings rations, it is alleged, provide some companies with cheaper capital than others, thus giving them a financial advantage. This is discussed in the following paragraphs.

a) Exchange Rates

One explanation offered in the literature regarding the flow of cross-border acquisitions and the different level of abnormal returns to companies involved in domestic and cross-border acquisitions, relate to exchange rate fluctuations. As discussed below, there are a number of problems associated with this explanation.

Caves (1988) found the level of cross-border investment into the US to decrease when the dollar was strong relative to other currencies. Similarly, Rao (1988), the Economist (1992f) and Swenson (1993) noted that the level of cross-border acquisitions into the US was higher at "...times when the U.S. dollar was relatively weak". (Swenson, p. 258). Morgan and Morgan (1991) argued that,

> "when a currency fluctuates ... there are bound to be times at which it is under-valued, and these will provide bargain-hunting opportunities for overseas companies". (p. 66).

A problem with this argument is the inherent assumption that it is possible *ex ante* to determine whether a currency is over- or under-valued, and whether the shift in

exchange rates is transitory or permanent.

Froot and Stein (1991) developed a theory based on market inefficiencies to explain the negative correlation they observed between the strength of the US dollar and the value of cross-border investment into the US.

> "...When there are informational asymmetries about an asset's payoffs, it will be costly or impossible for entrepreneurs to finance the asset solely with externally obtained funds. The more net wealth an entrepreneur can bring to such an "information-intensive" investment, the lower will be his total cost of capital... To the extent that foreigners hold more of their wealth in nondollar-denominated form, a depreciation of the dollar increases the relative wealth position of foreigners and hence lowers their relative cost of capital. This allows them to bid more aggressively for assets." (p. 1194).

The second part of Froot and Stein's argument is fraught with problems. While Froot and Stein found cross-border investments into the United States to rise when the dollar exchange rate fell, American firms were still acquiring firms abroad, even if they (according to Froot and Stein's theory) should then have been at a cost disadvantage. As pointed out by Adler (1993), "...Froot and Stein could not find any association between outward U.S. FDI and the exchange rate". (p. 251). Neither Rosengren (1988) nor Healy and Palepu (1993) found the exchange rate to be successful at explaining flows in cross-border acquisitions. Healy and Palepu concluded that "...there are no serious informational imperfections across countries for equity investment". (p. 248).

Leaving aside the arguments as to whether or not changes in the exchange rate may help explain the number or total value of cross-border acquisitions, a further issue which needs to be considered, is whether exchange rate fluctuations may have an impact on the level of abnormal returns to target and/or bidding company shareholders in cross-border acquisitions.

As discussed further in chapter 4, several papers such as Servaes and Zenner

(1990), Harris and Ravenscraft (1991), Swenson (1993) and Kang (1993) found target company shareholders to have gained more in cross-border acquisitions when the currency of the predator's home country was 'strong'[16] relative to the target company's currency, compared to when the reverse was the case. It should be noted, however, that not all researchers have supported the currency argument. For example, Cebenoyan *et al.* (1992), Feils (1993), and Dewenter (1995a) did not find the strength of the currency to have had a significant impact on the level of abnormal returns.

Cakici *et al.* (1991) argued that "while a devalued dollar might enable the foreign buyer to acquire an American firm at a discount, the dollar cash flows subsequent to the merger are correspondingly less valuable when converted back into the foreign currency at the current exchange rate. Thus, a low foreign exchange value of the dollar does not justify high prices for American target firms". (p. 45). A similar view was expressed by McCulloch (1993, pp. 41-42). In addition, it is unclear why, as indicated by the results of Servaes and Zenner (1990) and Harris and Ravenscraft (1991), the bidder appears to pass on the apparent exchange rate benefit to target company shareholders. If there is no discrimination against e.g., foreign bidders acquiring in the US, foreign bidders should be able to acquire US companies by paying takeover premiums similar to those offered by local bidders. *Ceteris paribus*, it should thus not be necessary for foreign bidders to offer superior takeover premiums. Consequently, the target company cross-border effect may not be directly attributable to an exchange rate effect. The question of whether exchange rates have an impact on the level of abnormal returns thus remains a controversial issue. This may be an interesting area for future research, although even if abnormal returns and

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16 Harris and Ravenscraft (1991) "...measure the strength of the buyer's home currency relative to the U.S. dollar as the proportionate deviation from the average exchange rate for the sample period" (p. 832), while Swenson (1993) applied a dummy variable approach whereby the currency was classified as strong when the exchange rate was above the average exchange rate for the sample period. While such approaches allow for an *ex post* classification of the strength of the currency, this approach relies on data unavailable at the time of the acquisition. While it is possible *with hindsight* to determine the strength of the currency, it is presumably significantly more difficult for bidding companies to determine, at the time of the bid, whether the currency is strong or weak.

exchange rates are found to be correlated, the cause of such a link may be difficult to ascertain.

b) Price/Earnings Ratios

Another capital market factor which has in the literature been linked to cross-border acquisitions, is the price/earnings (PE) ratio. Aliber (1970) argued that differences in PE ratios (or in his terminology, capitalization ratios) may explain cross-border acquisitions.

> "Source-country firms capitalize the same stream of expected earnings at a higher rate than host-country firms. This difference in capitalization rates result because the market attached different capitalization rates to income streams denominated in different currencies. Source-country firms are likely to be those in countries where capitalization rates are high; host-country firms are those in countries where capitalization rates are low." (Aliber (1970), p. 28).

This argument fits in with Caves (1990), who, in addition to establish that the level of cross-border takeover activity into the UK was inversely correlated with the strength of the dollar, also found that more cross-border takeovers took place when the equity security prices in the source country were high relative to the level of equity prices in the US.

There are, however, problems with Aliber's theory. For example, Aliber's theory does not help explain why, for example, American companies acquire British firms at the same time as UK based firms are engaged in acquisitions in the US (Hamill (1991a)). The logical conclusion from Aliber's theory, is that, *ceteris paribus*, cross-border investments should only flow in one direction at the time. In addition, Aliber's argument implicitly assumed that stock markets can consistently be fooled[17]. If

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17 This is possibly a reflection of Aliber's work now being fairly dated. It is worth noting that Aliber's work is based on observations prior to the main theoretical developments on the efficient markets hypothesis (see e.g., Fama (1970)).

earnings from a company in a low capitalisation ratio country would be capitalised at the rate of the acquiring company's higher rate, the market would be inefficient. (The same principle applies to domestic takeovers; earnings of the combined company should be valued by the stock market on the basis of a weighted average PE ratio, and not that of the acquiring company)[18]. It is unlikely that stock markets will consistently make such mistakes. The extent to which differences in capitalisation ratios provide some companies with 'cheap' capital, giving them a competitive advantage in takeover markets, thus remains an open issue.

A further problem with Aliber's model may be that it relates to *countries* with high/low average PE ratios, rather than to the PE ratios of *companies* within countries. Thus, for example, while Japanese companies on average have high capitalisation ratios, there are large variations in PE ratios between the various companies in the Japanese market. An analysis of the impact of country-wide PE ratios on the level of abnormal returns is therefore likely to be of limited value, and has not been undertaken in this study.

2.4.4. Segmented takeover markets

Segmented takeover markets may also provide incentives for cross-border acquisitions. Fatemi and Furtado (1988) argued that domestic and cross-border acquisitions may produce different levels of abnormal returns if markets for corporate control are segmented across national boundaries. Fatemi and Furtado argued that

> "if the market for corporate control is not as competitive elsewhere as it is in the home country, then the acquiring firm may be able to make foreign acquisition bids at advantageous terms without having to worry that its low bid will attract a competitive bidder". (p. 364).

Considering the significant scale of domestic and cross-border takeover activity

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18 The combined company may have different growth prospects than the weighted average of the two firms. If so, PE ratios may justifiably differ from the weighted average.

into the UK (Business Briefing (various issues), Cooke (1988)), it is unlikely that this market is sufficiently 'segmented' to allow overseas bidders to acquire UK assets at below their 'fair value'. In order for 'bargains' to be available to overseas bidders, the UK takeover market would not only have to be inefficient, but the valuation of UK companies would also have to be inefficient. There appears to be little evidence to suggest that this is the case. Conn and Connell (1990) predicted that US companies acquiring in the UK would perform better than UK companies acquiring in the US (likewise, US targets would gain more than UK targets), as the British takeover market was perceived by the authors to be less efficient than the American one[19]. However, such an assumption was only weakly supported by their evidence. While US bidders *did* perform marginally better than the British ones (and US targets gained more than the UK ones), both British and American bidders appear to have lost substantially from the cross-border acquisitions. Indeed, contrary to what one would expect if their predictions were valid, Conn and Connell found US bidders to have performed worse in cross-border acquisitions into the supposedly less efficient UK market, than they did in domestic US acquisitions[20]. Thus, their study provides little empirical evidence to support the argument that segmented takeover markets may explain the different levels of abnormal returns in domestic and cross-border acquisitions.

This study analyses, as far as data allows, the difference in the level of abnormal returns in cross-border acquisitions depending on the nationality of the bidder. This analysis of national variations provides *some* insight into the segmented markets hypothesis. The empirical analysis in Chapters 7, 8 and 9 highlights some interesting national variations within the area of cross-border acquisitions into the UK. This study may therefore provide some insight into the question of segmented takeover markets.

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19 As is discussed further in chapter 4, the assumption that the US takeover market is more efficient than the UK one, is questionable.

20 It should be noted, however, that Conn and Connell did not study domestic US acquisitions, but rather made a general comparison to findings from other studies based on US data.

2.4.5 International risk diversification

The final benefit of cross-border acquisitions assessed in this chapter, is that associated with international risk diversification. Sudia (1992) summarised the diversification argument by stating that,

> "there is little or no disagreement over the positive effects of risk reduction as a result of diversification... The debate continues, however, over whether or not it is most advisable to diversify internationally using direct investment through the diversification of a multinational corporation's real assets, or to diversify indirectly by investing in internationally oriented mutual funds or by personally investing in the equity of foreign firms". (p. 68).

If shareholders can diversify internationally cheaply and efficiently themselves[21] (by e.g., buying shares directly in overseas companies), the international risk diversification provided through corporate cross-border acquisitions may not create shareholder wealth. Markides and Ittner (1994) argued that,

> "...the mere presence of benefits to international *portfolio* diversification does not imply that international diversification at the *corporate* level is also beneficial". (p. 345).

Similar views were expressed by Hymer (1976), Jacquillat and Solnik (1978), Brewer (1981) and Fatemi (1984). Michel and Shaked (1986) went further, arguing that "...domestic corporations appear to have a superior risk-adjusted performance". (p. 95).

However, Hughes *et al.* (1975), Hymer (1976), Hisey and Caves (1985) and Markides and Ittner (1994) argued that, under certain circumstances, investors *could* benefit from international corporate diversification through cross-border acquisitions. Hymer argued that "the main reason why the firm may do it rather than leave it to shareholders may be that it has more information". (pp. 40-41). If a company is better informed than its investors, the company may be able to make better investment

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21 See e.g. Solnik (1974) and Davis (1991) for a discussion of the benefits available to investors from diversifying internationally.

decisions than its shareholders. Markides and Ittner added that "...the multinational corporation is performing a valuable service to investors in that it allows them to diversify their portfolios *indirectly*". (p. 346). Thus, one would expect corporate international diversification still to have the potential of being beneficial to shareholders, in particular if the acquisition price is very favourable, or if shareholders are unable to cheaply acquire shares abroad, which may be the case for e.g., small investors. As there *may* be some benefits to shareholders of corporate international diversification, one would expect, *ceteris paribus*, the stock market to react at least as favourably to cross-border as to domestic bidders.

2.5. Conclusion

Kang (1993) argued that,

> "since the theory of FDI posits that imperfections in product markets, factor markets, and capital markets give multinational firms a competitive advantage over local firms in the host country [Kindleberger (1969), Caves (1971), Hymer (1976), and Froot and Stein (1991)], cross-border acquisitions are likely to create more wealth than domestic acquisitions. Since targets tend to reap more of the benefits of the acquisitions, the theory suggests the wealth gains to targets of ...[foreign] firms are larger than those to targets ...[in domestic acquisitions]". (p. 348).

This chapter contains an evaluation of imperfections in international markets which may act as a motive for cross-border acquisitions. These imperfections include product market imperfections, government intervention and regulatory policies such as market access and taxation, capital market imperfections regarding exchange rates and price/earnings ratios, segmented takeover markets and international risk diversification.

If product markets are inefficient, bidding companies may reap benefits (such as cost savings) from operating abroad. However, testing such a hypothesis is fraught

with difficulties, as any positive abnormal return to cross-border bidders, if present, can not be directly attributable to exploitation of product market inefficiencies.

Cross-border acquisitions may also be motivated by a need or a desire to establish a presence within a restricted trading area. With regard to the UK, there is thus a possibility that bidding companies based outside the EC are prepared to pay higher prices for UK targets, or performing better themselves (due to the value of market access) than either cross-border acquisitions within the EC or domestic UK acquisitions. This is analysed in the empirical section of this thesis.

Different tax systems in different countries may have an impact on the level of abnormal returns to targets and bidders, although the evidence so far is inconclusive. The effect, if any, of exchange rate changes and varying price/earnings ratios on the different level of abnormal returns in domestic and cross-border acquisitions, is open to debate. As discussed in the chapter, both arguments rest on an assumption of capital markets being inefficient *and* that these inefficiencies are readily identifiable and exploitable by bidding companies. Such an assumption is questionable (Fama (1991)).

If takeover markets are segmented along national boundaries, overseas bidders may be able to take advantage of inefficient markets by acquiring undervalued companies. There is, however, little evidence to suggest that the UK takeover market is inefficient, and this may be a relatively unimportant motive for cross-border acquisitions into the UK.

Finally, cross-border acquisitions may be undertaken in order to achieve international risk diversification. However, while there is little disagreement that investors benefit from international investment (Solnik (1974) and Davis (1991)), more controversy surrounds the issue of whether shareholders benefit from *corporate* international diversification. Markides and Ittner (1994) argued that "...*at least at a theoretical level*, it is possible that international acquisitions provide benefits to the firm". (p. 346). The extent to which these benefits have been found to be present in empirical studies, and if so, whether they tend to be reaped by the target or bidding

company shareholders, is discussed in the review of the existing literature on cross-border acquisitions contained in chapter 4. The results from this study (as discussed in chapters 7 to 9) also analyses whether the level of abnormal returns are systematically different in cross-border and domestic acquisitions. However, as evident from the above discussion, the various motives put forward for cross-border acquisitions are not mutually exclusive. It is consequently not feasible in this study to test which, if any, of these factors, are responsible for any cross-border effect that may be present.

Prior to analysing the level of abnormal returns to target and bidding company shareholders in cross-border and domestic acquisitions into the UK during the 1986 to 1991 period, existing literature on domestic and cross-border acquisitions will be reviewed in order to establish the key findings, as well as to consider the methodologies adopted in the existing literature. A discussion of domestic acquisitions follows in Chapter 3, while the literature on cross-border acquisitions is discussed in Chapter 4.

CHAPTER 3

REVIEW OF KEY LITERATURE ON DOMESTIC ACQUISITIONS IN THE UK AND US - METHODOLOGIES AND FINDINGS

3.1. Summary

In the existing literature, two main approaches have been adopted in the evaluation of the financial merit of acquisitions, involving an application of either accounting data (such as the level of profitability), or share return data (known as event study) in the analysis. Singh (1971 and 1975), Meeks (1977), Ravenscraft and Scherer (1987), Scherer (1988), Herman and Lowenstein (1988) and Holl and Pickering (1988) all applied accounting data in their analysis of acquisitions. However, the use of accounting data for analysing acquisitions has come under severe criticism (Appleyard (1980), Pike and Neale (1993)), particularly (in the earlier studies such as Singh (1971 and 1975) and Meeks (1977)) where due care has not been taken to control for biases caused by e.g., varying accounting policies.

Event study methodology has become the dominant methodology for evaluating the financial merit of acquisitions. This involves estimating the impact of the acquisition on share returns. The most common event study method is the market model, where expected returns are linked to the share's historic performance relative to the stock market index, although other models (such as the index model, the capital asset pricing model (CAPM) and the adjusted β model) have been applied. (See Chapter 6 for a fuller discussion of event study methodology). Care is required when comparing results from different studies, not only due to the different markets and time periods analysed, but also due to the different methods and event windows providing different results. However, there is considerable evidence to suggest that target company shareholders gain significantly (in the UK and the US) during the time period leading up to and including the time of the bid announcement.

The findings of some key articles with regard to the abnormal returns to bidding

Table 3.1

Summary of Previous Findings Regarding Abnormal Returns to Bidding Company Shareholders in Domestic Acquisitions in the United Kingdom and the United States

United Kingdom

Author	Time period	Key results
Franks, Broyles and Hecht (1977)	1955-1972	Gains during period up to and including bid
Firth (1979)	1972-1974	Large losses during bid period
Franks and Harris (1989)	1955-1985	Large gains during period up to and including bid Gains or large losses during post-bid period depending on model
Limmack (1991)	1977-1986	Marginal gains during period up to and including bid Losses or large losses during post-bid period depending on model

United States

Author	Time period	Time period
Mandelker (1974)	1948-1967	Large gains during pre-*completion* period Small losses during post-completion period
Jensen and Ruback (1983)	(Various studies published late 1970s and early 1980s)	Gains during bid period
Loderer and Martin (1990)	1966-1984	Small gains during bid period
Franks, Harris and Titman (1991)	1975-1984	Small losses during bid period Small gains during post-bid period. Overall, small gains.

company shareholders, is contained in Table 3.1. As can be seen from this table, the results are highly varied. Overall, the results seems to suggest that US bidders earn small positive (or marginal negative) abnormal returns over the period of the bid, while the results for UK bidders appear to be less favourable. The evidence from the UK indicate that returns to bidding company shareholders were particularly poor over the

period *following* the takeover bid.

3.2. Introduction

This chapter contains a discussion of some key literature on domestic acquisitions in the UK and the US. The aim of the chapter is not to provide a comprehensive review, but rather to highlight some of the main findings with regard to the financial merit of takeover activity, and to discuss the impact of the choice of methodology on the results obtained. The empirical section in this thesis contains an analysis of takeover activity (domestic and cross-border) in the UK. This chapter, however, also contains a discussion of studies based on the US market, as the US is the single most important country with regard to cross-border acquisitions into the UK. An understanding of the US takeover market will therefore facilitate the interpretation of the results with regard to cross-border acquisitions, as discussed in subsequent chapters.

3.3. Analysis of the financial merit of domestic acquisitions based on accounting data

Singh (1971) analysed UK mergers between 1948 and 1960, with particular emphasis on what characterises takeover targets. Singh found takeover victims on average to have had very poor short term profitability prior to being acquired. However, a more significant feature of takeover targets, was their generally low market value[22]. In 1975, Singh elaborated and argued that,

> "... the take-over mechanism may well be doubly inefficient: first, it cannot be relied upon to force firms to maximise (or even improve) profitability, as it selects large rather than just profitable companies for survival, and secondly, it may well reduce post-amalgamation profitability." (p. 512).

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22 Analysis by Harris *et al.* (1982) has established that US targets too tend to be significantly smaller than nonacquired firms.

Meeks (1977) used accounting information on UK takeovers taking place between 1964 and 1972 to analyse the impact of acquisitions on profitability, and like Singh (1971 and 1975) also commented on the characteristics of target companies. In his analysis, Meeks made adjustments for two factors which could distort the measured impact of the acquisitions on profitability. Firstly, he corrected for general industry-wide changes by "... expressing conventional profitability as a proportion of the current year's profitability of the industry in aggregate." (p. 15). Secondly, Meeks adjusted his numbers for a further problem caused by the application of alternative accounting policies[23]. Takeover targets were found to be smaller, but perform no worse than the average for the industry as a whole. Acquirors, on the other hand, tended to be much larger and performed far better than the industry average.

> "...These conclusions bear out Singh's (1971 and 1975) findings on the pre-merger characteristics of merging companies: in particular the takeover mechanism does not appear to have singled out the unprofitable as victims; and small size rather than low profitability appears to have been the characteristic which attracted the 'discipline' of takeover." (Meeks (1977), p. 21).

Turning to the analysis of pre- and post-acquisition profitability, Meeks concluded that although profitability increased slightly in the year of the acquisition,

> "every year after the merger reveals a decline in profitability; in three years this decline is significantly different from zero at the 1% level; and in each post-merger year the majority of companies experience a decline." (p. 25).

Thus, despite the widespread popularity of acquisitions, *on average* they turned out to be 'disappointing marriages'. Meeks noted, however, that "... acquirers with relatively successful pre-merger record will typically be less unsuccessful at subsequently improving or maintaining profitability after merger." (p. 46).

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23 If the acquiror records the acquired assets at its purchase price rather than what they were valued at in the books of the acquiree (i.e., if the merged company applies acquisition rather than merger accounting procedures), net assets will be inflated, and profitability deflated compared to the pre-bid situation.

3.4. Criticism of the application of accounting data in the analysis of acquisitions

Appleyard (1980) warned about the many hazards involved in evaluating the success or otherwise of acquisitions using accounting data. Although Meeks (1977) made two adjustments in his analysis, several additional factors may have biased his results. Applying accounting rate of return measures have several weaknesses.

> "In the empirical literature the conventional definition of the accounting rate of return (ARR) is net profit before interest expenses and tax ... divided by (depreciated) net assets. It is clear that this definition does not capture any financial benefits since the numerator is determined prior to interest and tax, and the denominator does not distinguish sources of financing. Therefore, to the extent that financial considerations are the motivation for a merger the rate of return fails to signal any benefits when indeed they exist." (Appleyard, p. 542).

Appleyard also noted that if the acquiring company applied acquisition (rather than merger) accounting, only the proportion of the target company's profits earned after the acquisition would be included in the joint accounts. However, all assets would be added to the balance sheet, thus reducing reported profitability in the year of the acquisition[24].

An alternative approach while still applying accounting data in the evaluation of acquisitions, is to analyse changes in earnings per share (EPS), rather than overall changes in profitability. However, such a procedure is not seen as appropriate in the evaluation of acquisitions. EPS can be increased by acquiring companies with low earnings per share (PE) ratios (Brealey and Myers (1988)). In an efficient market (Fama (1991)), such a procedure would lead to a fall in the PE ratio of the acquiror, thus leaving shareholders in the acquiring company no better off, assuming no

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24 It should be noted that such an explanation can not account for Meeks (1977) finding that post-acquisition profitability tended to be superior in the year of the acquisition, but *then* deteriorated for several years after the business combination had taken place. However, if the two companies applied different accounting procedures prior to the acquisition, the group accounts may have exhibited a fall in the reported profitability lasting for several years while the accounting procedures of the two companies were harmonised.

efficiency gains were made (Brealey and Myers (1988)). Like the accounting rate of returns (ARR), EPS may also be influenced by changes in accounting or financial policy. There is thus a danger in relying on changes in reported EPS to assess the financial gain from acquisitions. Pike and Neale (1993) elaborated on the limitations of applying accounting data to evaluate acquisitions, and summarised the problems as,

> "1. Different accounting conventions used by different firms, e.g. treatment of extraordinary items, often makes comparisons misleading.
>
> 2. Post-acquisition measures of profitability may be distorted due to the application of acquisition accounting procedures...
>
> 3. To assess properly the impact of the takeover really requires an extended analysis... Many acquisitions are undertaken for 'strategic' purposes, the benefits of which may only show through after several accounting periods perhaps following lengthy and costly reorganizations....
>
> 4. Accounting studies are not capable of assessing what the performance of the expanded group would have been in the absence of the merger and are thus unable to assess what improvement in performance (if any) was due to factors beyond the merger *per se*. This problem increases with the time period used for the post-merger integration.
>
> 5. This approach does not allow for risk...". (p. 535).

There are thus several problems in applying accounting data in the analysis of acquisitions. Hughes (1990) suggested,

> "the difficulties of estimating the changes in accounting profitability and real effects in terms of resource use have led some investigators to emphasize the virtues of using stock price movements as a better guide to the

performance impact of mergers". (p. 89)[25].

Due to the problems of using accounting information to evaluate the financial impact of acquisitions, most researchers have turned to an analysis of share price changes as an evaluation tool. Some papers do, however, still rely on accounting data, such as those by Ravenscraft and Scherer (1987), Scherer (1988), Herman and Lowenstein (1988), and Holl and Pickering (1988)). While tending to be more sophisticated than the earlier papers in their adjustments for potential accounting biases, these studies still suffer from some of the limitations associated with the application of accounting data in the evaluation of acquisitions, such as the problem of incorporating risk, and the difficulties in capturing the effect of the acquisition in the accounts[26]. Due to the limitations of accounting data in the evaluation of acquisitions[27], this study is based on an analysis of share return data.

3.5. Analysis of domestic acquisitions based on share return data

"...The Efficient Capital Market Hypothesis [states] that share prices fully and instantaneously reflect all new information..." (Franks *et al.* 1977). Consequently, on the *announcement* of an unexpected event (such as a takeover bid), the share price should move up or down depending on whether the bid is perceived by the stock market to be advantageous or disadvantageous to the company's shareholders. Share returns (changes in share prices plus dividend yield) over and above what one would have expected (expected returns) had no acquisition been announced, can be attributed to the 'event'. This abnormal return can be taken to be the stock market's assessment of the net benefit or disadvantage of the proposed acquisition.

Event study methodology was originally developed by Fama, Fisher, Jensen, and

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25 Hughes added, however, that applying share price data "...is not without its own important limitations". (p. 89). The problems of share price data is discussed more fully in Chapter 6.

26 A few recent papers such as e.g., Higson and Elliott (1992) in the UK and Healey *et al.* (1992) and Cornett and Tehranian (1992) in the US, have combined analysis of accounting and share price data.

27 The problems associated with accounting data would be particularly severe in a study of cross-border acquisitions, due to the different accounting regulations and conventions applicable to the different markets.

Roll (1969), who analysed the effect of stock splits. The methodology has since been applied to the analysis of other firm-specific events, such as takeover bids.

Event study methodology (as applied in this study) is discussed in Chapter 6. Before progressing further, however, it is worth noting that different studies have applied different variations of event study methodology. The main methodological differences between papers relate to:

* the model applied for estimating "normal" or expected returns (such as the market model, the adjusted β model, the capital asset pricing model, and the index model),
* the time period over which normal returns have been estimated (known as the parameter estimation period)[28], and
* the time period over which (cumulative) abnormal returns have been calculated (known as the event window)[29].

Differences in the level of gains or losses to shareholders (abnormal returns) observed in the various studies may thus, at least partly, be due to methodological differences as well as to differences between different takeover markets or variations over time. Consequently, great care is needed when comparing results from different studies.

3.5.1. Empirical evidence from the United States

The first application of event-study methodology to the analysis of acquisitions, was undertaken by Mandelker (1974). Mandelker used the market model[30] to

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28 While most studies (including this one) have taken a period *prior* to the bid announcement to be a 'normal' period over which to estimate the expected returns, some studies (such as Mandelker (1974) and Conn and Connell (1990) have applied the after-bid period as well. As will be discussed further below, studies also vary greatly with regard to the length of the parameter estimation period.

29 While some studies such as Doukas and Travlos (1988) concentrate their analysis on the individual bid announcement day, others, such as Limmack (1991) analyse the abnormal returns over a period of several years. (In this study, as explained in Chapter 6, ten and fourteen month event windows are applied for target and bidding companies, respectively).

30 Mandelker estimated the market model parameters (α and β) using observations from both before and after the bid period.

analyse share price movements stemming from acquisition *completions*[31] taking place in the United States between 1948 and 1967. Mandelker estimated that over the period from 40 to 7 months prior to the bid completion[32], target company shareholders had, on average, encountered insignificant negative abnormal returns. However, over the seven month period prior to the completion of the acquisition, target company shareholders, on average, gained approximately 14%. With regard to the bidding companies, cumulative abnormal returns (CAR) over the 40 months prior to the completion of the acquisition amounted to +5.1%. However, during the following 40 months, CAR fell by 1.7%.

Mandelker concluded that the overall impact of acquisitions on the acquiring companies shareholders was small, but positive. However, as Mandelker estimated CAR over a very long interval, it could be argued that it is possible that not *all* the abnormal share price performance during this period was due to the acquisitions. Mandelker argued that the "...results suggest that the informational impact of a forthcoming merger is spread over approximately thirty months before the event". (p. 312). However, even if the stock market may anticipate acquisitions several months prior to the formal announcement[33], it is unlikely that the market can anticipate such transactions as long as 3 years prior to the completion of the acquisitions. Thus, while positive pre-acquisition CARs for the acquirors show that these companies, on

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31 Subsequent studies have tended to use the bid *announcement* as the 'event'. Using the completion date as the event date has certain limitations, as highlighted by Jensen and Ruback (1983), "the expected price effect will occur on or before the first public announcement of a takeover. Therefore, because the announcement date occurs at random times prior to the effective date, using the latter as the event date makes it difficult to identify changes in security prices that are due to the takeover event itself." (p. 10).

32 Mandelker observed that bid announcements on average took place some 8 weeks prior to the completion of the acquisitions.

33 The length of time prior to the bid announcement at which target companies shares starts rising varies from study to study, but usually at least 3 months, as was found for example in the study by Franks *et al.* (1977) and Parkinson and Dobbins (1993). Gupta and Misra (1989) argued that "...price run-ups preceding takeover announcements occur in the presence of publicly available information". (p. 231). The pre-bid abnormal returns to targets thus seems to be driven by bid speculation rather than by insider dealing. While the share price of the target companies on average rise significantly prior to bid announcements, Pound and Zeckhauser (1990) argued that the stock market was not very accurate in its predictions of takeover targets. In an analysis of 42 takeover rumours published in the newspapers, only 18 of the predicted targets received a takeover bid within 1 year of the published bid speculation.

average, performed abnormally well *prior* to the acquisition, one should be careful in interpreting this as a gain *due* to the acquisition. It may, therefore, be argued that the effect *of the acquisition* on acquiring company shareholders was somewhat lower than the +3.4% reported by Mandelker.

One of the most influential studies of US mergers and acquisitions[34] is Jensen and Ruback (1983). This review paper contained an analysis of the results obtained in 13 previous American studies on the wealth effects of corporate acquisitions. Jensen and Ruback's results (with regard to acquisitions[35]) are summarised in Table 3.2. Their results suggest that bidders in successful tender offers experienced significant abnormal returns. Even if some of these gains seems to have been lost during the year following the acquisition, the majority of acquiring companies appear to have gained from successful tender offers. However, in failed tender offers, bidders usually lost.

Target company shareholders gained significantly from tender offers, regardless of whether the offer succeeded or failed. In unsuccessful bids the target companies' shares continued to perform well, even 12 months after the bid. Jensen and Ruback noted that,

> "in unsuccessful tender offers the target's stock price remains substantially above its pre-offer level, unless a subsequent bid does not occur in the two years following the initial offer. If such a subsequent bid does not occur, the

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34 As did Franks and Harris (1989), Jensen and Ruback made a distinction between mergers and tender offers. This thesis focuses on acquisitions (which incorporate tender offers). The importance of dividing acquisitions into two groups may have less to do with the legal form of the transaction (i.e., mergers versus acquisitions), than with the different methods of payment (acquisitions are generally cash financed, while mergers involve an exchange of shares) and/or the different degrees of opposition to the bid (mergers have to be agreed by target company management, while acquisitions can be hostile). Thus, while the distinction between mergers and acquisitions made by Jensen and Ruback may be important, the difference in results between mergers and acquisitions (both targets and bidders appears to have performed worse in mergers than in acquisitions) may be associated with other effects than with the legal form of the transaction. In this thesis, for example, the cross-sectional analyses (contained in Chapters 7, 8, and 9), analyses, amongst other variables, the impact of the method of payment and whether or not the bid was competitive or revised, on the level of abnormal returns.

35 This study focuses on acquisitions rather than mergers, and Jensen and Ruback's results with regard to mergers will not be reviewed here.

Table 3.2

Percent Mean Cumulative Abnormal Returns (CAR) in US Tender Offers

Adopted from Jensen and Ruback (1983), pp. 11-13 and 21.

* The announcement effect was calculated over time intervals ranging from (t-5, t days) to (t-40, t+20 days), where t is bid announcement day).

$ As explained by Dodd and Ruback (1977) (from which Jensen and Ruback obtained these results) some of the target companies were delisted after the bid announcement (e.g., at t+12, the sample size was reduced to 74). Each month's abnormal return was calculated as the equally weighted mean of the abnormal returns to companies listed during that event month.

	BIDDING FIRMS		TARGET FIRMS	
	Successful %	Unsuccessful %	Successful %	Unsuccessful %
TENDER OFFERS				
Announcement effects*	**+ 3.8**	**- 1.1**	**+ 29.1**	**+ 35.2**
Number of studies	(6)	(5)	(6)	(5)
Total sample size	(478)	(236)	(653)	(283)
Range of mean CAR in different studies	[+2.3; +6.7]	[-3.0; +0.6]	[+16.8; +34.1]	[+16.3; + 47.3]
Month after through twelve months after bid announcement	**- 1.3**	**-5.7**	**+ 8.0$**	**+ 1.5**
Studies	(1)	(2)	(1)	(2)
Sampled	(124)	(142)	(133)	(148)
Range of CAR	*	[-7.9; -1.6]	*	[-3.3; +3.0]

target's stock price reverts to its pre-offer level." (pp. 8-9).

It thus appears that the stock market anticipated further bids if the original tender offer failed.

Overall, when combining the results for target and bidding company shareholders, tender offers appear to have created significant shareholder wealth, at least based on the short-term stock market reaction. There are, however, difficulties in establishing precisely whether the transactions were value creating or not, due to the uncertainty regarding (particularly the post-bid) abnormal returns to bidders. As the bidding companies were on average substantially larger than the target companies, small losses to bidders may, *in value terms*, have offset most of the gains to the target

company shareholders.

Loderer and Martin (1990) undertook a large study of the impact on bidding company shareholders from domestic US acquisitions, covering 5,172 acquisitions during the 1966-1984 period. Applying the market model (with parameters estimated over days t-300 to t-101), Loderer and Martin found the mean abnormal returns for the six day period from t-5 to t to be +0.7%. However, while the mean abnormal return was positive, the authors found shareholders in only 52% of the bidding companies to have gained from the acquisitions. Converting the percentage abnormal returns into value terms, the median dollar announcement effect was found to be $0.3 million. However, due to some large losses, the mean was in fact negative, at -$2.7 million. Thus, while acquisitions on average led to very marginal positive abnormal returns to bidding company shareholders, there were large variations in results, with shareholders of some companies losing significantly.

Franks, Harris and Titman (1991) analysed 399 US acquisitions taking place between 1975 and 1984. They applied the market model, with parameters estimated over days t-240 to t-41. Looking first at the bid announcement effect (CAR over days t-5 to t+5), Franks *et al.* found target company shareholders to have gained +28.04%, while bidders lost -1.02%. The overall joint abnormal returns to target and bidding company shareholders (weighted according to market values) were +3.9 percent.

The main focus of the Franks *et al.* (1991) paper was, however, on the *post-bid* performance of the bidding companies. The study included an analysis of abnormal returns to bidding company shareholders over a 3 year period following the acquisitions. Applying different variations of the market model for estimating abnormal returns produced quite different estimates of bidder performance after the acquisitions. This led the authors to argue that the negative post-acquisition performance of bidders "... are likely due to benchmark errors rather than mispricing at the time of the

takeover." (p. 81)[36]. Franks *et al.* (1991) argued that the error was caused by a size effect, as smaller firms outperformed "...larger ones by 1.62% per month". (p. 90)[37]. Consequently, Franks *et al.* argued that abnormal returns should be calculated relative to a portfolio of companies with similar size (and dividend yield) as the company being analysed[38]. When measuring abnormal return compared to 8 such control portfolios, Franks *et al.* (1991) found bidders performed slightly *better* than the companies in their benchmark portfolio after the acquisition, and concluded that bidding company shareholders overall gained marginally from the acquisitions. This somewhat differ from the findings by Mandelker (1974) of negative post-bid returns, and gives a substantially different picture than the evidence for the UK by e.g., Limmack (1991) (as discussed below), who found bidding company shareholders to lose significantly during the post-bid period.

From the studies reviewed, the empirical evidence with regard to acquisitions in the US suggest that, on average, bidding company shareholders gain, or do at least not lose substantially, as a result of domestic takeover activity. In the following section, studies of domestic acquisitions in the UK, such as Franks *et al.* (1977), Firth (1976, 1979, 1980), Franks and Harris (1989) and Limmack (1990, 1991) are discussed. While the majority of evidence from the US suggest that bidding company shareholder gain, the evidence from the UK is less uniform.

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36 Previous research (such as Franks and Harris (1989) and Limmack (1991)) has indicated that abnormal returns to bidding company shareholders are negative for extended time periods following the bid announcement. This has become known as post announcement 'drift', and is discussed in more detail in section 6.5.4. Controversy surrounds the cause of such drift. While Franks *et al.* (1991) argued that the drift was due to model misspecification, this has been disputed by e.g., Bernard and Thomas (1989), Agrawal *et al.* (1992), Ball *et al.* (1993) and Brown and Pope (1995).

37 Franks *et al.* applied both a value-weighted index (where each company is weighted according to its market capitalisation) and an equally-weighted stock market index in their analysis. Franks *et al.*, however, discarded both of these indices, in favour of size-matched control portfolios.

38 The size effect is discussed in more detail in section 6.4.2. In this study, rather than applying size-matched control portfolios, the size effect is controlled for in the cross-sectional analysis.

3.5.2. Empirical evidence from the United Kingdom

Franks, Broyles, and Hecht (1977) analysed abnormal returns to shareholders from successful acquisitions of companies in the UK Breweries and Distilleries sector during the 1955 to 1972 period. Applying the market model, Franks *et al.* (1977) found target company shareholders, on average, to experience cumulative abnormal returns (CAR) of +22.3% during the period from 4 months prior to the bid announcement, to two months after the bid month. The comparable abnormal returns to bidding company shareholders was +3.5%. The gains to the bidders were not, however, sustained over the period after the acquisition was completed.

Firth (1976) applied the market model in an analysis of abnormal returns to target company shareholders from 214 UK bids announced during 1973 and 1974[39]. Firth estimated the market model parameters on "... the last 57 four-weekly recordings ..." (p. 79) prior to the bid announcement. One weakness with this approach of using data right up to the bid, is that there is a possibility of the alpha and beta estimates being affected by bid rumours reaching the market prior to the formal announcement[40].

Firth found the shares of target companies, on average, to move in line with the stock market index up until approximately 30 days prior to the announcement of the bid. During the period from day t-30 to day t-1, mean cumulative abnormal return to target company shareholders amounted to +9.7%. On the day of the announcement, the abnormal returns rose by a further 22.1%. By the end of day 30 after the announcement of the bid, cumulative abnormal returns (t-30, t+30) to target company shareholders amounted to +36.9%.

Cross-sectional analysis revealed that competitive bids and bid revision had a major impact on the level of abnormal returns to target company shareholders,

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39 Firth's sample included all takeovers of publicly quoted companies in the UK announced during these two years, with the exception of bids where the bidder held a pre-bid stake in the target of 30 percent or more, or where the bid was for preference shares. (pp. 27-28). The effect of pre-bid stakes is discussed in section 6.4.3, and is analysed in the cross-sectional analysis of Chapters 7, 8 and 9.

40 The problems of parameter estimation and bid leakage, are discussed in section 6.4.1.

"the first counterbid premium averaged 19.7 per cent and the first revised bid averaged 18.0 per cent. This signifies that bidders often pitch their initial bids some way below what they are willing to pay." (p. 114).

Firth also found target returns to be higher in cash than in equity offers. As discussed in section 5.3.4, similar observations have been made by e.g., Halpern (1973), Franks *et al.* (1988), Echbo and Langohr (1989), Peterson and Peterson (1991) and Kaplan and Weisbach (1992). Due to the apparent significant impact of bid revision, the number of bidders and the method of payment on the level of abnormal returns, these variables are included in the cross-sectional analysis in this thesis.

In a later paper, Firth (1979) expanded the analysis to cover both target and bidding company shareholders in 224 domestic UK acquisitions during the period from 1972 to 1974. While again applying the market model, the parameter estimation period was changed to using data for the 5 year period from 72 to 13 months prior to the day of the bid announcement. This overcomes some of the problems of the previous study associated with estimating the parameters on data too close to the time of the bid announcement.

During the period from 48 to 13 months prior to the offer announcement, target company shareholders encountered small negative abnormal returns of -1.5%. This poor pre-bid performance of UK targets is consistent with the findings of e.g., Singh (1975) and Meeks (1977). For the time period from the month before to the month after the day of the bid announcement, Firth estimated mean cumulative abnormal returns to target company shareholders to be +34.9%, similar to that observed in his 1976 paper.

Turning to the bidding companies, Firth found these to have lost significantly around the time of the bid.

"On the day of the announcement there was a highly negative residual and 79% of acquirers suffered risk-adjusted declines in share prices. In the following month there was another highly significant decline in share prices.

... Subsequent to month +1 the recordings settled down to their market model relationship..." (p. 321)[41].

During the interval from one month prior to, to one month after the bid announcement date, average abnormal losses to acquiring companies amounted to -6%[42]. In the cross-sectional analysis, Firth noted that bidding companies offering equity rather than cash tended to perform better than other bidders (as judged by their share returns) during the pre-bid period, but to display larger negative abnormal returns during the period following the bid announcement. Firth thus argued that bidding companies appear to offer equity when their share price is at a peak.

While target company shareholders gained and bidding company shareholders lost, determining whether acquisitions overall (to targets and bidders combined) created or destroyed wealth is seen to be problematic. To overcome these difficulties, Firth converted the percentage gains and losses into pounds Sterling values, so that the differences in size could be taken into account, allowing analysis of overall wealth changes, as shown in Table 3.3.

As can be seen from this table, Firth estimated acquisitions to be highly beneficial for target company shareholders. However, their gains were more than offset by losses to the bidding companies, with almost 80 percent of bidders losing. Thus, UK acquisitions during the 1972 to 1974 period resulted in a significant transfer of wealth from bidders to targets, with a small net overall loss of wealth. In conclusion, Firth argued that,

"the results of the study showed that on average there were no gains associated with takeovers and indeed there was a very small loss (possibly due to expenses involved with the takeover process). Furthermore this no gain - no loss position was being maintained 24 months after the bid

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41 Thus, unlike Franks *et al.* (1991), Franks and Harris (1989) and Limmack (1991), Firth did not find the market model abnormal returns to bidders to indicate post announcement 'drift'.

42 In a subsequent paper (covering the time period from 1969 to 1975), Firth (1980) argued that the larger the gains to target company shareholders, the larger the losses to bidding company shareholders.

Table 3.3

Distribution of Abnormal Returns in UK Acquisitions 1972 - 1974

Adapted from Firth (1979), p. 324.

	Mean Abnormal Returns (£ Million)	Percent of Companies Experiencing Abnormal Losses
Target Companies	+655.6	0.9%
Bidding Companies	-664.7	79.9%
Total (Targets and Bidders Combined)	-9.1	53.1%

announcement..." (p. 326).

This finding is in stark contrast to the findings of the UK study by Franks *et al.* (1977) and to the US studies by Mandelker (1974) and Jensen and Ruback (1983). The differences in results may be due to different markets being studied, different methodologies applied, and different time periods studied[43].

In probably the most comprehensive study of acquisitions in the UK, Franks and Harris (1989) analysed more than 1,800 UK acquisitions taking place between 1955 and 1985. Target company shareholders were found to have gained approximately 29.7% over the six month period from month t-4 to t+1.

Cross-sectional analysis indicated that the level of abnormal returns to target company shareholders "...appear higher when the target is small in relation to the bidder." (p. 236). In addition, target company shareholders obtained higher abnormal returns if there was more than one bidder, or if the terms of the bids were revised.

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43 The 1972-1974 period analysed by Firth in his 1979 paper was a time of generally declining share prices as a result of the first 'oil price shock'. There may thus be a problem of the analysis being based on a short, and rather unusual, time period. However, as Firth applied the market model, he *did* adjust for general market movements. In addition, in a subsequent paper based on UK acquisitions during the 1969 to 1975 period, Firth (1980) estimated that acquisitions in the UK resulted, on average, in a net overall loss to target and bidding company shareholders of £36.6m per acquisition. The overall wealth effect of cross-border and domestic acquisitions in the UK during the 1986 to 1991 period, is analysed in Chapter 9 of this thesis.

Total gain to target company shareholders was almost the same whether the bid was competitive or revised[44].

In contrast to Firth (1976, 1979 and 1980), but in support of Franks *et al.* (1977), Franks and Harris (1989) found bidding company shareholders to have gained from domestic acquisitions. During the six month period from month t-4 to t+1, mean index model CAR to domestic bidders amounted to +7.9%. Bidders involved in competitive bids were seen to have performed only slightly worse than other bidders. Thus, higher abnormal returns to target company shareholders in multiple bidder situations appears to "... reflect larger gains to the merging process..." rather than overpayment. (Franks and Harris (1989), p. 240).

As mentioned above, Firth excluded from his analysis all acquisitions where the acquiror held a pre-bid stake in the target of 30% or more.

> "This procedure was adopted because the full takeover process is restricted when the offeror has a large pre-acquisition share stake (Firth (1980), p. 239).

However, when Franks and Harris (1989) analysed the difference in abnormal return dependent on the pre-bid stake in the victim, they concluded that target company shareholders received a *higher* premium where the bidding company held a pre-bid stake of at least 30% compared to where the bidder held no shares in the target prior to the bid. The impact of toehold stakes on target and bidding company shareholders' abnormal returns, is analysed in Chapter 7, 8 and 9 of this thesis.

The positive impact of the bid on the shares of bidding companies appear to have been only temporary. During the two years following an acquisition, average abnormal losses of 13 percent (when applying the market model) were encountered by the bidding companies. The performance of the bidder subsequent to the acquisition was,

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44 Due to the apparent importance of these variables, the effect of the relative size of the target and bidding companies, whether the bid was competitive or not and whether the offers are revised or not, is analysed in the cross-sectional analysis in this study.

however, highly dependent on the parameters applied[45]. Franks and Harris pointed out that,

> "... bidding firms (premerger) were outperforming the market by almost 1% per month. A failure to repeat this performance after the merger would show abnormal losses of over 20% over a 24-month period." (p. 245).

The reported poor post-acquisition performance may thus have been due to the fact that the bid was made after a period of exceptionally good performance, rather than the bid itself having caused the abnormal losses. While the two-year abnormal return was -13% compared to the market model, *positive* abnormal returns over the same time interval of +4.8% and +4.5% were obtained when applying the index model and the capital asset pricing model, respectively. Franks and Harris thus concluded that,

> "the postmerger performance of bidders depends on the benchmark returns against which bidders are evaluated." (p. 247).

Limmack (1991) analysed the abnormal returns to shareholders of 552 target and 529 bidding companies engaged in domestic acquisitions in the UK during the 1977 to 1986 period. In a previous paper (where he applied the index model), Limmack (1990) argued that,

> "while it is generally preferable to select models such as the Market Model which control for the risk of individual securities, such models also suffer from a potential lack of accuracy in parameter estimation." (p. 8).

Consequently, in his 1991 paper, Limmack applied three different test models. These were

1. The ordinary market model[46],

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45 As discussed in Chapter 8 and in section 6.4.4, a similar 'post-announcement drift' is observed for bidding companies in this study.

46 The Financial Times All Share Index (value-weighted) was used as a proxy for the 'market' in the calculation of R_m. Limmack also estimated abnormal return using an equally weighted index, thus in effect he applied six rather than three different control benchmarks. The market model parameters were estimated over the period 67 to 7 months prior to the bid announcement.

2. A model based on the application of adjusted betas[47], and

3. The index model.

With regard to bidding company shareholders, Limmack observed positive abnormal returns in the month prior to the bid announcement (with all three control methods), whether the bid eventually was successful or failed. However, while Limmack found bidders on average to have performed well *prior* to the acquisitions, they tended to lose *from* the acquisitions. During the period from bid announcement through to the outcome day, bidders lost, regardless of bid outcome. During the 24 months following the announcement of bid outcome, bidders in both completed and abandoned offers experienced "... a downward drift in returns over the whole period." (p. 248). However, as with Franks and Harris (1989), Limmack found the level of negative abnormal returns during the post-bid period to be highly dependent on the model used. The CAR for months t+1 to t+24 amounted to -4.67% with the adjusted β model, -14.96% with the market model and -7.43% with the index model. These results clearly indicate the importance of model specification, and highlight the potential limitations of basing studies on a single model.

In the cross-sectional analysis, Limmack found bidding company shareholders in failed bids to have experienced significantly lower abnormal returns than shareholders of bidding companies in completed acquisitions. Consistent with a stock market size effect (as discussed in section 6.5.2), Limmack found small bidders to perform better than larger ones. In his 1990 paper, Limmack also found shareholders of experienced bidders to gain slightly more than first time buyers (although the difference in return was not found to be statistically significant)[48]. As argued by Lubatkin (1983), studies which exclude frequent bidders from the analysis "...may apply ... for only a restricted

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47 Limmack applied adjusted betas calculated by the London Business School Risk Measurement Service (edited by Dimson and March).

48 It is worth noting, however, that Loderer and Martin (1990) found (US) bidders to perform significantly *better* following the announcement of their first bid than they did for subsequent bids. This may link in to Schipper and Thompson's (1983) argument that the first acquisition may be part of an announcement of an acquisition *programme*. If so, there is a potential danger of subsequent bids being anticipated by the market. This possibility is discussed further in Chapter 6.

sample of acquiring firms characterised as being infrequently merging". (p. 222). There is thus a danger in excluding frequent acquirors from the analysis, a procedure common with the application of the market model or the capital asset pricing model.

Turning to the performance of takeover targets, Limmack argued that,

> "significantly positive abnormal returns are obtained by target companies over a period beginning two to three months prior to formal announcement of the bid. ... completed bids were anticipated earlier than abandoned bids." (pp. 246-247).

During the period from three months prior to the bid, to just after the formal announcement of the offer, target company shareholders gained approximately +24%. In the period from bid announcement through to the announcement of the outcome, shareholders of targets in successful takeovers gained a further +6.2%, taking their total wealth gain from the acquisitions to over +30%. Shares of targets in unsuccessful offers, fell -3.3% during the same period.

For targets in failed takeover attempts, small companies maintained most of their premium during the 2 years following the bid. However, shares in large targets fell back to its pre-bid level. This seems to imply that the smaller surviving targets were thought to be more likely to receive another takeover bid than were the larger companies.

Limmack concluded that,

> "the results ... suggest that, at worst, acquisitions are not value reducing activities and acquisitions should not be opposed simply on those grounds. Bidder company shareholders do appear, however, to suffer wealth losses with too high a price paid for the benefits obtained from the acquisition which appears to involve a transfer of wealth to target company shareholders..." (p. 250).

Limmack thus found acquisitions overall to marginally create shareholder wealth, although the gains to target company shareholders exceeded the total wealth creation. This finding for acquisitions in the UK contradicts the findings of Firth (who found a net overall loss in wealth), but is supported by Franks *et al.* (1977).

3.6. Conclusion

This chapter contains a review of key literature on domestic acquisitions within the UK and US. Two main approaches have been adopted in the finance literature to evaluate the financial merit of acquisitions. One approach is to apply accounting data for an analysis of change in e.g., profitability from the period before to the period after the acquisition. Accounting data has been applied in the analysis of acquisitions by Singh (1971 and 1975), Meeks (1977), Ravenscraft and Scherer (1987), Scherer (1988), Herman and Lowenstein (1988) and Holl and Pickering (1988). Singh (1971 and 1975) and Meeks (1977) established that target companies in the UK tended to be small, but not necessarily poorly performing companies. Meeks further established that acquisitions reduced the level of profitability of the companies involved. Acquisitions, on average, thus proved to be 'disappointing marriages'. However, such analysis of acquisitions based on accounting data is subject to limitations. Appleyard (1980) and Pike and Neale (1993) discussed these problems, which are predominately associated with different companies adopting different accounting policies.

An alternative approach is to use share return data. Event study methodology, while also having potential limitations, has become the dominant mode for analysing acquisitions. This generally involves an analysis of the impact of takeover bids on share returns. (Event study methodology is discussed further in Chapter 6).

The existing empirical evidence suggest that target company shareholders, regardless of time period and market, gain significantly from their companies being acquired. There is also some evidence to suggest that the share price of target companies start rising as much as three months prior to the formal bid announcement

(Franks *et al.* (1977) and Franks and Harris (1989)). There is thus a danger of market model parameters being biased if estimated too close to the bid announcement[49]. There is also a possibility of short event windows not capturing the full wealth effect of the acquisition.

The existing evidence with regard to the returns to bidding company shareholders (as summarised in Table 3.1) is less uniform. The evidence from the United States (such as Mandelker (1974), Jensen and Ruback (1983), Loderer and Martin (1990) and Franks *et al.* (1991)) indicate that bidders generally gain, or do at least not lose significantly. The evidence from the UK tends to be less positive with regard to the returns to bidding company shareholders. Franks *et al.* (1977) and Franks and Harris (1989) found UK bidders to gain, at least during the bid period. However, Firth (1976, 1979 and 1980) observed large losses to bidders. In addition, large post-bid negative abnormal returns (at least with the market model) were observed by Franks and Harris (1989) and Limmack (1990 and 1991).

The results indicate that not only the time period and the market (e.g. UK versus US) being analysed, but also the methodology applied, may have a major impact on the level of the estimated abnormal returns. In particular, the market model returns for bidding company shareholders tend to be lower (particularly for long event windows) than the level of abnormal return estimates obtained using other models, such as the index model, the capital asset pricing model, or the adjusted β model (Franks and Harris (1989) and Limmack (1991)). The market model is based on the assumption that the relationship between the return on the market and the return on the share during the parameter estimation period will be a good predictor of the expected relationship between the two variables during the event period. Most market model parameters have been estimated during a time period prior to the bid announcement. If this is a period of unusually good share price performance for

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49 As the parameters are intended to provide an estimate of 'expected returns', they should be estimated during a time period unrelated to the takeover bid.

bidding companies, the market model constant term (α) may be inflated. The implication is that the share is expected to continue to earn a rate of return in excess of what is consistent with its level of systematic risk. Consequently, due to the high expectations, the market model was found to produce lower abnormal return estimates than either of the other models for both Franks and Harris (1989) and Limmack (1991). This highlight the potential limitation of relying exclusively on the results obtained using only one test model.

Using long event windows result in more severe parameter estimation problems than shorter windows (as any error will be multiplied for each time period during the event window, and the forecasting of expected return becomes more difficult the longer in the future one is attempting to predict). *However*, as target company shares have been found to rise several months prior to the formal bid announcement (e.g., Franks *et al.* (1977)) as well as abnormal returns to bidding company shareholders extending to several months after the period of the bid announcement, longer event windows have a better possibility of capturing the full impact of the event.

In addition to commenting on the average level of abnormal returns, several of the authors applied cross-sectional analysis to establish the impact of bid characteristics on the level of abnormal returns. The main explanatory variables were found to be whether the bid succeeded or failed (outcome), the number of bidders (competitive), whether the bid was revised or not (revised), whether the bid offered cash or equity (pay), whether or not the bidding company held shares in the target company prior to launching the bid (stake), the relative size of the target and bidding companies (relative size), the size of the company in question (size) and the level of takeover experience of the bidding company (experience)[50]. The main findings are summarised in Table 3.4. All of these explanatory variables (with the exception of bid experience, for which

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50 Jensen and Ruback (1983) found bidder returns to be lower in mergers than in tender offers (acquisitions), while both Jensen and Ruback (1983) and Franks and Harris (1989) found target company shareholders to gain more in acquisitions than in mergers. This study contains an analysis of takeover bids, and pure mergers (where there is no clear distinction between the bidder and the target) are excluded from the analysis.

Table 3.4

Summary of Previous Findings Regarding Explanatory Variables in Cross-Sectional Analysis of Abnormal Returns in Domestic Acquisitions in the United Kingdom and the United States

Variable	Study	Finding
Outcome	Jensen and Ruback (1983)	US target gains unaffected by outcome. However, if no subsequent bids, returns to targets in failed bids fall. US bidders gain in successful bids, but lose in failed bids.
	Limmack (1991)	Returns to UK bidders lower in failed than in successful bids.
Competitive	Firth (1976) and Franks and Harris (1989)	Returns to UK targets higher in competitive bids.
Revised	Firth (1976)	Returns to UK targets higher in revised bids.
Pay	Firth (1976)	Returns to UK targets higher in cash than in equity offers. Returns to UK bidders better pre-bid but worse post-bid in equity than in cash offers.
Stake	Franks and Harris (1989)	Returns to UK targets higher where pre-bid stake by bidder exceeds 30%
Relative Size	Franks and Harris (1989)	Higher returns to UK targets where target small relative to bidder.
Size	Limmack (1991)	Higher returns to small UK bidders than larger ones.
Experience	Limmack (1991)	Marginally higher returns to experienced UK bidders than to inexperienced ones.

no reliable data was available) have been analysed in the cross-sectional analysis in this study, contained in Chapters 7, 8 and 9.

Chapter 4 contains a discussion of the literature regarding the level of abnormal returns associated with cross-border acquisitions and a discussion of the extent to which the level of abnormal returns have been found to be different in domestic and cross-border acquisitions.

CHAPTER 4

REVIEW OF LITERATURE ON CROSS-BORDER ACQUISITIONS

4.1. Summary

This chapter contains a review of existing literature on the impact on shareholder wealth from cross-border acquisitions. The discussion focuses on two key questions:

a) Do target and bidding company shareholders gain or lose from cross-border acquisitions?

b) Are the levels of abnormal returns in cross-border and domestic acquisitions systematically different?

Table 4.1 contains a summary of the findings in the previous literature with regard to the returns to bidding company shareholders. As indicated in Table 4.1, some contradictions were observed with regard to whether bidding company shareholders gained or lost from cross-border acquisitions. The vast majority of articles relate to acquisitions into or out of the US. It appears that only three studies (Morck and Yeung (1992), Markides and Ittner (1994), and Doukas (1995b)) have observed significant gains to US bidders from cross-border acquisitions. The other studies on US bidders either found insignificant gains, or more often, losses. Bidders from other countries, however, appears to have generally performed worse than their US counterparts, although this is disputed by the evidence of Cakici *et al.* (1996). Studies of bidders from various countries into the US have generally observed losses. However, bidders from Japan seems to have been an exception. In two, admittedly fairly small studies, (Pettway *et al.* (1993), and Kang (1993)), Japanese bidders were found to gain significantly from acquisitions into the US. British bidders were found (by Conn and Connell (1990) and Feils (1993)) to have performed substantially worse than US bidders.

The evidence with regard to target companies is generally less controversial, as

Table 4.1

Summary of Findings of Previous Studies Regarding Gains and Losses to Bidding Companies in Cross-Border Acquisitions.

Summary of abnormal return estimates to bidding companies engaged in cross-border acquisitions. The findings of the various studies is discussed in more detail in the text.

	Author(s)	Time Period	Nationality of Bidders	Nationality of Targets	Overall Findings
Positive Abnormal Returns:	Pettway *et al.* (1993)	1981 - 1991	Japan	US	Significant gains
	Kang (1993)	1975 - 1988			
	Cakici *et al.* (1996)	1983 - 1992	Various	US	Significant gains
	Morck and Yeung (1992)	1978 - 1988	US	Various	Significant gains
	Markides and Ittner (1994)	1975 - 1988			
	Doukas (1995b)	1975 - 1989	US	Various	Significant gains (to high *q* firms)
	Tessema (1985)	1974 - 1985	US	Various	Insignificant gains
	Doukas and Travlos (1988)	1975 - 1983			
Neutral Abnormal Returns:	Servaes and Zenner (1990)	1979 - 1988	Various	US	Insignificant losses (1990 paper), insignificant gains (1994 paper)
	Servaes and Zenner (1994)	1979 - 1991			
	Sudia (1992)	1967 - 1989	US	Various	Insignificant gains and losses (changed over time)
	Biswas (1990)	1977 - 1987	Various	Various	Neutral

Table 4.1 (Continued)

	Author(s)	Time Period	Nationality of Bidders	Nationality of Targets	Overall Findings
Negative Abnormal Returns:	Fatemi and Furtado (1988)	1974 - 1979	US	Various	Significant losses
	Waheed and Mathur (1995)	1963 - 1989			
	Datta and Puia (1995)	1978 - 1990			
	Song (1993)	1981 - 1990	Various	US	Significant losses
	Mathur *et al.* (1994)	1984 - 1988			
	Mathur *et al.* (1989)	1986 - 1988	Various	US	Insignificant losses
	Eun *et al.* (1995)	1979 - 1990			
	Lin *et al.* (1994)	1980 - 1989	US	Various	Insignificant losses
	Cakici *et al.* (1996)	1983 - 1992			
	Conn and Connell (1990)	1971 - 1980	US and UK	UK and US	Large losses. UK bidders worse than US bidders.
	Feils (1993)	1980 - 1990			

all studies find large, generally highly significant, abnormal returns to target companies in cross-border acquisitions. There is, however, some disagreement as to whether shareholders gain more or less from cross-border than from domestic acquisitions.

As is indicated in Table 4.2, most studies found target company shareholders to have received a higher premium in cross-border than in domestic takeovers (a positive target company 'cross-border effect'). Negative cross-border effects were found by Biswas (1990) and inferred by Cakici *et al.* (1991). However, as discussed below, there are some methodological limitations in these studies, which limits the weight which should be placed on these results. It thus appears that shareholders generally gain more when the bidding company is based abroad.

4.2. Introduction

As was indicated in the introduction to this thesis, Fatemi and Furtado (1988, p. 364) argued that shareholder wealth effects would not be systematically different in domestic and cross-border acquisitions unless at least one of three conditions is not met:

"(1) the market for corporate control were not segmented across national boundaries,

(2) the capital markets were not internationally segmented, and

(3) there were no net benefits (disadvantages) associated with international diversification".

In this chapter, literature studying the wealth effects of cross-border acquisitions is reviewed. In particular, the extent to which cross-border and domestic takeovers have been found to differ in the literature is discussed.

4.3. Review of previous studies of cross-border acquisitions

Wansley, Lane and Yang (1983) analysed the level of abnormal returns to shareholders of US target companies in 39 cross-border and 164 domestic acquisitions

Table 4.2

Summary of Findings of Previous Studies Regarding Gains to Target Companies in Cross-Border Acquisitions and Cross-Border Effects*

Summary of findings regarding target companies engaged in cross-border acquisitions. The findings of the various studies is discussed in more detail in the text.

	Author(s)	Time Period	Nationality of Cross-Border Bidders	Nationality of Cross-Border Targets	Nationality of Domestic Targets (for comparison)	Overall Findings
Positive Cross-Border Effect	Wansley *et al.* (1983)	1970 - 1978	Various	US	US	Significant, positive cross-border effect
	Harris and Ravenscraft (1991)	1970 - 1987				
	Cebenoyan *et al.* (1992)	1978 - 1987				
	Marr *et al.* (1993)	1975 - 1987 (Cross-border) 1979 - 1987 (Domestic)				
	Tessema (1985)	1974 - 1985	Various	US	US	Insignificant, positive cross-border effect
	Shaked *et al.* (1991)	1975 - 1983	Various	US	US	Positive cross-border effect
	Swenson (1993)	1974 - 1990				
	Cheng and Chan (1995)	1985 - 1990				

* 'Cross-border effect' refers to where the target company shareholders obtained a higher positive cumulative abnormal return in cross-border than in domestic acquisitions.

Table 4.2 (Continued)

	Author(s)	Time Period	Nationality of Cross-Border Bidders	Nationality of Cross-Border Targets	Nationality of Domestic Targets (for comparison)	Overall Findings
Neutral Cross-Border Effect	Kang (1993)	1975 - 1988	Japan	US	US	No cross-border effect
	Feils (1993)	1980 - 1990	UK and Germany	US	US	No cross-border effect
	Servaes and Zenner (1990)	1979 - 1988	Various	US	US	Positive CB effect 79-80 and 86-88, negative 81-86
	Dewenter (1995a)	1975 - 1989	Various	US	US	Marginally positive for one industry, marginally negative for the other.
Negative Cross-Border Effect	Biswas (1990)	1977 - 1987	Various	Various	US	Insignificant negative cross-border effect
	[Cakici *et al.* (1991)]	1982 - 1987	Various	US	[US]	[Low CAR relative to CAR observed in *other* domestic studies]

Table 4.2 (Continued)

	Author(s)	Time Period	Nationality of Cross-Border Bidders	Nationality of Cross-Border Targets	Nationality of Domestic Targets (for comparison)	Overall Findings
Other studies related to cross-border targets	Mathur *et al.* (1989)	1986 - 1988	Various	US	N.A.	Gains to cross-border targets, but no comparison to domestic targets
	Song (1993)	1981 - 1990				
	Eun *et al.* (1995)	1979 - 1990				
	Dewenter (1995b)	1975 - 1989				
	Conn and Connell (1990)	1971 - 1980	US and UK	US and UK	N.A.	Larger gains to US targets.
	Feils (1993)	1980 - 1990				

between 1970 and 1978. Applying the market model[51], cumulative abnormal returns (CARs) were estimated over the 41 day period from t-40 to t to be +38.64% in cross-border and +28% in domestic acquisitions. The 10.64 percentage points difference (target company 'cross-border effect') was found to be statistically significant.

However, such an overall comparison of average CAR for cross-border and domestic takeover targets may be subject to limitations. Referring to Elgers and Clark (1980) and Gordon and Yagil (1981), Wansley *et al.* argued that acquisition type (horizontal, vertical or conglomerate), as well as the method of payment (cash, securities, or a mixture), may have an impact on the level of abnormal returns in acquisitions. Controlling for method of payment may be of particular importance when comparing national and international acquisitions, as the cross-border bids were almost exclusively cash financed, while US bidders were slightly more inclined to offer securities than cash.

The vast majority of the acquisitions were of a conglomerate nature. Wansley *et al.* thus decided to restrict their analysis to the sub-group of cash financed conglomerate mergers, to evaluate whether there was a real "cross-border effect", or whether the difference in average CAR in cross-border and domestic acquisitions were attributable to the differences in the method of payment and the degree of relatedness for the two groups of bidders.

For the cash financed conglomerate acquisitions, foreign bidders were still found to pay a superior premium to domestic US bidders. However, the difference (4 percentage points) was no longer statistically significant. Wansley *et al.* therefore concluded that,

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51 Wansley *et al.* applied the market model based on 200 daily observations ending 41 trading days prior to the bid announcement. There is a danger that this estimation period ends too close to the announcement of the takeover, so that share prices have already started to rise. However, in the paper the authors stated that "different estimation periods are tried and in no case are the results of this paper altered." (p. 651). Thus, for these takeovers, it appears that the markets reaction started less than forty days prior to the bid announcement. This is slightly at odds with the findings for the UK by Limmack (1991) that "significantly positive abnormal are obtained by target companies over a period starting two to three months prior to the bid." (p. 246).

"no significant differences exist in the premiums paid for USA companies by foreign and domestic acquirers in conglomerate mergers when cash is the method of finance." (p. 654).

In his Ph.D. thesis, Tessema (1985) analysed cross-border acquisitions in the US market. "The shareholder returns of both U.S. firms acquiring foreign firms and those acquired by foreign firms are compared with the shareholder returns of U.S. firms involved in purely domestic mergers". (p. 1).

Tessema applied the market model with parameters estimated over days t-90 to t-11[52]. Cumulative abnormal returns were calculated for a 21 day period from t-10 to t+10. The study contained an analysis of acquisitions[53] taking place between 1974 and 1985, and consisted of 840 US companies acquiring other US firms and 227 US companies acquiring abroad, as well as 227 US target companies in domestic acquisitions and 107 US targets in cross-border transactions.

Over the total analysis period (1974-1983), insignificant positive abnormal returns were observed for both domestic and cross-border bidders. However, it was further established that companies acquiring abroad significantly outperformed domestic bidders during the 1974-1978 period, while the reverse was true during the 1979-1983 period, when cross-border bidders significantly underperformed domestic bidders.

In the cross-sectional analysis, Tessema noted that bidding companies, on average, performed significantly better in cash transactions than when the merger involved an exchange of shares.

The study also included an analysis of the abnormal returns to US target companies in domestic and cross-border acquisitions. The mean CAR (t-10, t+10) was +9.3% in domestic and +13.7% in cross-border acquisitions. The positive target

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52 As with Wansley *et al.*, there is a danger of the market model parameters estimated over a period so close to the bid announcement being influenced by a pre-bid rise in the target company share price.

53 The study was not restricted to full takeovers, but included "...acquisitions involving a minimum of 10 percent and/or $10 million equity transfer". (p. 5).

company cross-border effect was not, however, statistically significant. As was observed for the bidding companies, target company shareholders (particularly in cross-border acquisitions) obtained higher abnormal returns in cash than in equity transactions.

Tessema expressed some reservations with regard to the event window applied in his study.

> "The test period of -10 days to +10 days in which we expected to see the impact of international mergers and acquisitions on share prices may not be adequate since benefits from international acquisitions may be realised at a much later date. Therefore, we suggest a longer analysis period". (p. 126).

This recommendation has been taken into account in this study, where the event window (for bidding company shareholders) include a five month period following the month of the bid announcement.

Fatemi and Furtado (1988) analysed the abnormal gains and losses incurred by shareholders of 117 US corporations buying companies abroad. Their sample comprised "... all firms reported as having made a foreign acquisition between January 1974 and December 1979..." for which share price data and the date of the offer announcement were available. (p. 366). Their study was restricted to successful acquisitions.

The authors applied the market model, with parameters estimated using 150 daily observations from day t-210 to day t-61. Abnormal returns were calculated for each of the 11 days from t-5 to t+5, as well as the cumulative abnormal return for the periods (t-60, t-2) and (t+1, t+60).

In order to establish whether movements in a company's shares were attributable to the takeover announcement itself or to any other firm specific event unrelated to the acquisition taking place at the same time, Fatemi and Furtado analysed the release

of significant news about the bidders during a period from twenty days prior to, to three days subsequent to the day of the cross-border bid announcement. On this basis, they split the sample into four groups:

(1) "Clean" - No news about the company in question released during the 24 day period,

(2) "Neutral" - News released, but were not thought to have had any impact on share prices,

(3) "Favorable" - News thought to have had a positive impact on share prices,

(4) "Not favorable" - News expected to have had a negative impact on share prices.

During the 60 day period prior to the announcement of the cross-border bid (t-60, t-2), shareholders of US bidding companies on average experienced significant negative abnormal returns of -4.6%. However, Fatemi and Furtado argued that "... the negative preannouncement wealth effects detected for the entire sample can be attributed to the contamination effect of other events." (p. 368). In other words, the share price performance for the group of firms about which "not favorable" news emerged, pulled down the average pre-bid announcement performance for the whole sample. For the "clean" group, there were no significant pre-bid movements in the share prices. The analysis of the impact of information unrelated to the takeover announcement is interesting, although there are several complications involved in following such a procedure. Most importantly, there is a problem in defining what news is expected to have a "positive", "neutral" or "negative" impact on a company's share price. In efficient markets (Fama (1991)), share prices should react to *unexpected* new information, not to information already anticipated. Thus, if a company for example reports a loss of £x, it is difficult to establish whether this will be perceived by investors as good or bad news, without knowing what was expected. If a larger loss was anticipated, the report of a loss of £x may indeed be "positive" news. Consequently, as a lot of uncertainty relates to what market expectations are, no attempt has been made in this thesis to control for the effect of news release.

Fatemi and Furtado hypothesized that the benefits of international diversification (if any) would be larger for the first venture abroad than for subsequent expansion of overseas activities[54]. Of the companies in their sample, for only two were the authors able to ascertain with certainty that the companies had no prior international involvement. Ninety-three companies did already operate abroad, while for the remaining twenty-two companies the authors had no information regarding foreign operations. The companies were split into two, according to whether they operated abroad prior to the cross-border acquisition (93 companies) or did not operate abroad/no information was available (24 companies). The authors compared the mean abnormal returns to companies in the two groups, and concluded that,

> "... there is weak evidence suggesting that the foreign acquisitions are associated with positive wealth effects when they are the means for the initial entry into a foreign market." (p. 372).

However, for only two companies were the authors certain that the cross-border bidding companies did not operate abroad prior to the acquisition. For the remaining 22 companies in this category, the authors had insufficient information. If any of these companies did operate abroad prior to the bid, the difference in abnormal returns between the two groups may have been attributable to some other (unknown) effect rather than the benefit of "... initial entry into a foreign market" (p. 372).

Fatemi and Furtado analysed whether the abnormal returns to US bidders varied according to the nationality of the takeover target. As discussed in section 2.4.4 and as argued by Conn and Connell (1990) (discussed below), there is a possibility of shareholders of cross-border bidding companies to gain the most where the local

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54 This is contrary to the predictions of Hymer (1976) and Servaes and Zenner (1994). Hymer argued that "national firms have the general advantage of better information about their country: its economy, its language, its laws, and its politics. To a foreigner the cost of acquiring this information may be considerable. But note that this is a fixed cost; once incurred by establishing a foreign operation, it need not be incurred again". (p. 34). Servaes and Zenner similarly suggested that "an acquisition may be more beneficial if the acquiring firm has prior experience in the U.S. market, since this presence may reduce the transactions costs of acquiring the assets and integrating them into the acquirer's operations" (p. 49), although Servaes and Zenner acknowledged that "initial investments in a country may allow a company to gain more of the benefits of foreign direct investment". (p. 49).

market for corporate control is underdeveloped and uncompetitive. Of the countries analysed, US bidders appeared to be performing worst (both pre- and post-acquisition) when acquiring Canadian companies. However, Fatemi and Furtado concluded that

> "The results ... indicate that no particular country or region can be characterized as one in which target firms are consistently mispriced." (p. 375).

Thus, Fatemi and Furtado (1988) found no support for the inefficient capital markets hypothesis.

Doukas and Travlos (1988) studied the gains and losses to shareholders of US bidding companies engaged in international acquisitions between 1975 and 1983[55]. In total, Doukas and Travlos studied 301 cross-border acquisitions made by 202 different US companies. They based their analysis on the market model, with parameters estimated on daily observations for the period from t-136 to t-16 (where t is the bid announcement day)[56]. On the day of the bid announcement, shareholders of US bidding companies on average gained +0.08%, which was statistically insignificant. However, as pointed out by Doukas and Travlos, these acquisitions were "...a heterogenous group..." (p. 1167). Consequently, they spit their sample into the following three groups (pp. 1164-1165):

(1) "MNCs [multi-national corporations] not operating in the target firm's country" (99 acquisitions),

(2) "MNCs operating in the target firm's country", (175 acquisitions), and

(3) "Domestic firms going abroad for the first time" (13 acquisitions).

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55 As did Fatemi and Furtado (1988), Doukas and Travlos controlled for news release unrelated to the acquisition being analysed by excluding from the analysis companies involved in "...concurrent major corporate events (i.e., other takeover activities, divestitures, common stock repurchases, exchange offers, new offerings of securities, and announcements of new contracts) for the fifteen-day period prior to the announcement day (t=0)..." (p. 1164).

56 Although the problem is likely to be more pronounced for analysis of target companies than of bidders, estimating the market model on data so close to the announcement may lead to biased market model parameters if the stock market foresees the takeover.

The performance of the bidding companies varied significantly between the different groups. Companies already operating abroad, but not yet in the market of the target company gained on average +0.31% on the bid announcement day (significant at the 95% level). Companies not previously operating abroad gained more than the previous group of MNC bidders not operating in the country. However, due to the small sample size, the +0.74% gain was not statistically significant. Bidding companies already operating in the country of the victim lost slightly on the day the takeover was announced (-0.08%, which was statistically insignificant).

There appears to have been some gains, although small, to shareholders of companies who bought companies in countries where they did not already operate. Doukas and Travlos discovered that this gain was larger when the country of origin of the target country was a less developed country compared to when the acquisition was into another developed country[57]. Doukas and Travlos (as did Fatemi and Furtado (1988)) thus argued that there were some benefits to bidding company shareholders from acquisitions into new markets. Their findings thus lend some support to the international diversification theory.

In a subsequent paper, Doukas (1995b) analysed the abnormal returns to shareholders of US bidders from cross-border acquisitions, extending the analysis from Doukas and Travlos (1988) to cover the 1975-1989 period. The total sample consisted of 463 completed takeovers, undertaken by 234 U.S. companies. Doukas applied the market model, with parameters estimated over days t-220, t-21. The main focus of Doukas' analysis, was on the importance of Tobin's *q* ratio, which is a measure of a

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57 A possible explanation for the additional gain of entering less developed countries may be that the competition here is smaller than in developed countries. The acquiring company may therefore be able to (ab)use market power to gain high returns.

Doukas and Travlos also found the shares of bidding companies to perform better when the acquisition was into a new industry as well as into a new market. A discussion of the merits of conglomerate versus horizontal or vertical mergers, is beyond the scope of this thesis.

company's market to replacement value[58]. Doukas found that,

> "the two-day announcement period cumulative abnormal returns for firms with average *q* ratios greater than unity (i.e., value-maximizing firms[59]) is 0.41%..., statistically significant at the 5% level. On the other hand, bidder returns are negative and statistically insignificant at any conventional level for overinvested firms (i.e., firms with average *q* ratios less than unity). The difference is significant at the 1% level". (pp. 1290-1291).

In support of Doukas and Travlos (1988), Doukas (1995b) confirmed that US bidders performed better when entering into new markets. Two of the other variables which were found to be of importance were the exchange rate (US bidders did better when the dollar was strong relative to the currency of the country of the target company) and the effect of taxation, with US bidders performing particularly well when entering into less developed countries with tax rates lower than US rate of corporation tax. However, as the US corporate tax rate was reduced in the 1986 Tax Act, the gains from acquiring companies in low tax jurisdictions diminished after this date.

In a short paper, Mathur, Chhachhi and Sundaram (1989) discussed *successful* cross-border acquisitions into the United States between the first quarter of 1986 and the first quarter of 1988. Mathur *et al.* imposed further restrictions on the companies to be included in their sample:

a. "The stock of the U.S. target firm should be listed and its daily price data should be available; and

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58 Lang *et al.* (1991) defined Tobin's *q* as "...the ratio of the market value of the firm's assets to their replacement cost...". (p. 316).

59 It is worth noting that Doukas did not analyse or offer any evidence in support of the hypothesis that Tobin's *q* can be used as a measure of the degree to which the company's management is competent and value maximising. This issue is covered in more detail towards the end of this chapter when discussing the article by Eun, Kolodny, and Scheraga (1995).

[b] The non-U.S. bidder firm's stock should be traded in the host country and its daily price should be available in either Financial Times ... or The Wall Street Journal." (p. 24).

Due to these restrictions, their sample was limited to 18 large acquisitions. Mathur *et al.* applied the market model with parameters estimated using 100 daily observations for the period up to 15 days prior to the bid announcement[60]. Cumulative abnormal returns were estimated over the period from 15 days prior to 15 days after the announcement. During the two-day period from t-1 to t, target company shareholders gained +25.9%, while over the whole 31 day event window from t-15 to t+15, the cumulative abnormal returns reached +27.7%.

On the announcement day, bidders gained insignificantly. However, over the 31 day analysis period, shareholders of the foreign bidding companies, on average, lost approximately -3% on average (statistically insignificant).

With regard to comparisons with the abnormal return from domestic transactions, Mathur *et al.* argued that,

"... comparisons should be kept in perspective because the domestic mergers and mergers involving non-U.S. firms are not strictly comparable. The second class of mergers are exposed to a variety of other factors [such as exchange and political risk], to which the first category is not." (p. 26).

Although it is acknowledged that the abnormal return from cross-border and domestic acquisitions are influenced by different factors, the view that these abnormal returns are not comparable is not supported. Regardless of the additional risk and complications involved in evaluating and undertaking cross-border acquisitions, analysis of cross-border effects provide a valid measure of the different merit of domestic and cross-border acquisitions.

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60 As discussed previously, parameters estimated over a period close to the bid announcement may be biased if the bid is predicted.

In a subsequent paper, Mathur, Rangan, Chhachhi and Sundaram (1994) again analysed the impact on shareholders of foreign companies which made acquisitions into the US during the 1984 to 1988 period. Their sample of 77 acquisitions included 23 acquisitions of publicly listed companies, 24 of private companies, and 30 of subsidiaries of US companies[61].

Mathur *et al.* (1994) applied the same market model methodology as in the 1989 paper. The overseas bidding companies on average lost a significant -0.26% over the three day period t-1, t+1. In addition, Mathur *et al.* noticed that "...the returns to the foreign bidders in the present study continue to become more negative over time. This result may indicate that more information about the acquisition is revealed to the capital markets after the initial acquisition announcement is made". (p. 115). Over the period from t+2 to t+15 days, the overseas bidders on average lost an additional -1.62%. Over the total test period from t-15 to t+15, the mean CAR was -2.72%. While their analysis covered three distinct groups of US targets (listed companies, private, and units), Mathur *et al.* argued that "...bidder abnormal returns are not affected by ownership structure". (p. 115).

In their cross-sectional analysis, one of their main findings was the importance of exchange rates. Mathur *et al.* discovered that "...a 10% decline in the value of the dollar relative to foreign currency will increase abnormal returns by 0.53% for a bidder from that country". (pp. 113-114).

Conn and Connell (1990) studied mergers between companies in the United Kingdom and the United States taking place between 1971 and 1980. The study contained an analysis of the returns to shareholders of 32 UK and 35 US bidding companies and 22 UK and 24 US target companies. Their sample was restricted to listed companies "... which had no other merger activity ± 3 years around the international merger and no other significant firm-specific event...[during the same 6

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61 In this study (see Chapter 6) only acquisitions of publicly listed companies are included in the analysis.

year period]." (p. 692).

These cross-border mergers were mainly nonconglomerate, "... financed with cash rather than stock ..., and involved mostly manufacturing firms..." (p. 692). Few companies have shares listed in the country of the target firm, which may explain the predominance of cash financing in cross-border acquisitions.

Conn and Connell used the market model in their analysis. However, they applied an international market model (IMM) as well as the more traditional domestic market model (DMM)[62]. The DMM and the IMM were defined as follows:

DMM: $R_{it} = \alpha_i + \beta_{iD}R_{Dt} + e_{it}$

IMM: $R_{it} = \alpha_i + \beta_{iD}R_{Dt} + \beta_{iI}R_{It} + e_{it}$

where the subscript D was used for domestic and I for international observations for security *i* during time period *t*. (Note that the α_i and β_{iD} estimates are not the same in the domestic and the international market models).

> "...R_{It} is the international index calculated as the weighted average of the domestic and stock indices of the nine major European trading partners of the US or Britain ... weights were determined based on average export and import value of trade during 1970 - 80 of each of those countries with US or Britain." (p. 694)[63].

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62 Conn and Connell adjusted the domestic and international market model estimates for thinness of trading by applying a trade-to-trade procedure developed by Dimson and Marsh (1983). The adjusted estimates were denoted DMM' and IMM':

DMM': $R_{it}/\sqrt{d_{it}} = \alpha_i/\sqrt{d_{it}} + \beta_{iD}R_{Dt}/\sqrt{d_{it}} + e_{it}$

IMM': $R_{it}/\sqrt{d_{it}} = \alpha_i/\sqrt{d_{it}} + \beta_{iD}R_{Dt}/\sqrt{d_{it}} + \beta_{iI}R_{It}/\sqrt{d_{it}} + e_{it}$

"... where R_{it} is the continuously compounded return on security i during period t which is the period between two recorded trades in security i, R_{Dt} and R_{It} are the continuously compounded return on [domestic and international] markets over precisely the same calendar time period t, d_{it} is the length (in days) of period t, and α_i is now redefined as a continuously compounded return per day during estimation period p. Note that the observations are weighted to allow for the different period lengths to ensure that the beta estimates are efficient as well as unbiased." (Dimson and Marsh (1983), p. 756. Notation has been slightly altered).

Franks *et al.* (1977) also applied a trade-to-trade procedure in adjusting their β estimates. Note that the adjustment method applied by Franks *et al.* and Conn and Connell requires exact information on the number of days prior to the end of the month the last transaction took place.

63 The trading partners referred to were Belgium, France, Denmark, Italy, Netherlands, Norway, Spain, Switzerland, and West Germany and the UK or the US (depending on whether a UK or a US company was analysed).

The weights were thus *not* based on world market capitalisation.

For both UK and US targets and bidders, the international and the domestic market models gave very similar results. Conn and Connell argued that "... there is no compelling reason to incur the extra research costs associated with the more complex IMM." (p. 708). The results from Conn and Connell's paper, as discussed next, thus refer to the DMM' model[64].

For the target companies, the market model parameters were estimated using monthly data for months t-36 to t-7. Conn and Connell found that US targets earned significant positive abnormal returns quite a long time prior to the bid. During the period from 9 to 2 months before the announcement, the cumulative abnormal return (CAR) averaged as much as +12%. According to the authors, "this is a larger pre-announcement price movement than reported by any other US study...[of domestic takeovers]." (p. 697). At the end of the bid announcement month, CAR had risen to almost +40%. This is higher than the average for US domestic acquisitions as found in the American papers reviewed by Jensen and Ruback (1983). However, not all of these papers covered the same time period or applied the same methodology (including a long 'event window').

UK targets gained significantly less from cross-border acquisitions between UK and US companies than did shareholders of US targets. The CAR from month t-9 through to the end of month zero was approximately +18%, compared to almost +40% for the US targets. As was shown in the previous chapter, UK targets in domestic transactions generally received higher premiums than they did in these cross-border transactions with US bidders. However, a direct comparison is difficult, due to the different methodologies applied. Conn and Connell (1990) did not include domestic acquisitions in their analysis, which would have facilitated such a comparison.

As with the US target company shareholders, part of the gain to UK targets

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64 As explained further in Chapter 6, domestic models are applied in this study, where the return on the market is taken to be the return on the stock market index in the company's domestic market.

accrued long before the bid announcement, with approximately 8 percentage points out of 20, or 2/5 of the total CAR to UK targets accruing *prior* to the announcement of the offer.

Conn and Connell noticed the problems in deciding which period should be assumed to be 'normal' and therefore used for estimating the market model parameters (α and β). For *bidding* companies, they therefore estimated the parameters over three different periods:

(1) From 36 to 7 months prior to the bid announcement,

(2) From 7 to 36 months after the bid announcement, and

(3) Combining the previous two, thus covering the periods (t-36, t-7) and (t+7, t+36) where t is the month of the first bid announcement.

For both US and UK acquirors, their estimated abnormal performance were highly dependent upon the time period applied for the parameter estimation.

> "In general, CAR based on pre merger returns are smaller than CAR based on post merger returns, and hence, CAR based on pooled returns fall between the values found using pre or post returns." (p. 699).

US bidders performed very well prior to making the cross-border bids for UK target companies. During the period from 12 to 8 months prior to the bid announcement (t-12, t-8) bidders earned abnormal returns of +5% or +9% depending on whether the pre- or post-merger benchmark was applied[65]. During the two month bid period (t-1, t), the pre- and post-merger models provided conflicting results. At the end of month t, CAR (from t-12 to t) applying the domestic market model were approximately

- 2.5% with pre merger data,

+ 3.4% using pooled data, and

+ 10.4% with post merger data.

Most other studies of the US market for corporate control have applied pre merger

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65 When applying the pre-bid parameters, there is a problem of this time period (from t-12 to t-8) being *part* of the parameter estimation period, which extends from t-36 to t-7. As the parameter estimation period is generally assumed to be a period of 'normal' returns, it is highly unusual to have overlapping parameter estimation period and event window.

data in the market model (except for Mandelker (1974) who applied pooled data). Other studies of US acquisitions have generally not found such large average losses to bidders in the few months prior to the bid announcement. Conn and Connell therefore argued that,

> "... controlling for models used, international mergers by US firms are viewed more sceptically by the securities market than are domestic US mergers at the time of first public announcement." (p. 702).

However, Conn and Connell did not study domestic acquisitions, which would allow for a more direct comparison between domestic and cross-border acquisitions.

During the six month period following the bid announcement, bidder performance once again differed substantially between pre and post merger estimates of α and β. Over the period from t+1 to t+6, bidders *lost* so that CAR fell to -10.2% with pre merger parameters, but *maintained* their performance at a positive CAR of +7.9% with parameters estimated over the period following the merger.

Conn and Connell estimated that a decline in α (from positive to negative) accounted for 85% of the difference in abnormal return estimates using pre or post acquisition observations in the market model. The fall in alpha estimates may partly have been attributable to the unusually good performance of bidders during the period prior to the bid which inflated the pre-acquisition alpha and beta values. This unusually good performance was not maintained after the acquisition, and the estimated alpha values fell.

> "the change in alpha is a signal that the market models (DMM and IMM) may be misspecified. It is commonly observed that security returns are correlated with firm size, and since merger instantaneously creates a larger firm, the absence of a firm size variable may create a shift in the intercept term." (p. 703).

The issue of stock market size effects is discussed further in section 6.5.2.

As for the US bidders, the level of abnormal returns to shareholders of UK bidders

varied widely depending on the period applied in estimating the market model parameters. During the year prior to the bid, shareholders of UK bidders did not perform exceptionally well, unlike their US counterparts. While CAR at t-8 (calculated from t-12) was +5% or +9% for US bidders (using pre and post merger based models), the corresponding figures for UK acquirors were -2% and +3.2%.

In the following months before the bid announcement, UK bidders continued to perform worse than the US firms. At time t, CAR (t-12, t) for UK bidders with pre, pooled, and post acquisition α and β were as follows (US figures also given for comparison):

	UK	US
Pre	-7.9%	-2.5%
Pooled	+2.0%	+3.4%
Post	+9.5%	+10.4%

According to Conn and Connell, differences in the markets for corporate control in the UK and US may account for the differences in abnormal returns to targets and bidders in the two countries. The authors wrote,

> "... there are a number of security regulations and antitrust laws in the US (e.g. Williams Act, Premerger Notification Act, and state merger laws) that facilitate the flow of information regarding mergers and hence encourage competitive bids." (p. 691).

Conn and Connell also argued that,

> "*a priori*, returns to foreign bidders should be relatively high if the market for corporate control is relatively inefficient in the UK ... similarly, returns to UK acquired firms should be less than those observed for US acquired firms..." (p. 691).

However, while Conn and Connell found US bidders to perform better than their UK counterparts, they did *not* perform particularly well after their acquisitions in the UK. It may therefore be that their hypothesis of superior return from acquisitions in less efficient takeover markets is incorrect. Another possibility may be that the UK takeover

market is *not* less efficient than the US takeover market[66]. Some of the findings are difficult to reconcile with Conn and Connell's hypothesis. Firstly, their theory does not help explaining why the UK target company shareholders in cross-border acquisitions by US bidders received a lower abnormal return than that found in other studies of UK targets in domestic offers[67]. In addition, US bidders in cross-border acquisitions appears to have performed *worse* than US acquirors in domestic transactions. If the UK market was inefficient, it would be expected that US acquirors gained more from takeovers in the UK than at home.

In a subsequent paper, Connell and Conn (1993) elaborated on the methodological issues raised in their 1990 paper. The large difference in CAR to bidding company shareholders depending on whether the market model parameters were estimated during a time period prior to or after the acquisition, were predominately (80%) attributable to a change in α rather than a change in β (20%) (p. 47). Connell and Conn gave a number of "possible explanations for the decline in alpha...:

1) influence of above average returns in the year preceding the merger...;
2) instantaneous increase in firm size due to merger and a resultant change in trading frequency[68]; and

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66 In the UK, takeovers have since 1968 been regulated by the City Code on Takeovers and Mergers. The City Code (The Panel on Takeovers and Mergers, 1990) imposes a number of restrictions on predators which, it could be argued, *enhance* rather than restrict efficiency in the takeover market. For example, full takeover bids have to be made when a 30% threshold is reached. There are also stringent information requirements. In the United States, takeover defences, such as greenmail, poison pills, and supermajority clauses, are common features. Such activities are either illegal or severely restricted in the UK. Manne (1965) argued that enforcing full bids hamper the efficiency of the takeover market. However, it may be the case that fair (or equal) treatment of shareholders is likely to increase the faith in the stockmarket, and increase the willingness of investors to risk their capital. The assumption that the US market for corporate control is less efficient than the US is therefore open to discussion.

67 It should be borne in mind, though, the difficulties of comparing abnormal return estimates between different studies due to the slightly different methodologies applied and time periods analysed.

68 The issue of thin trading is discussed further in section 6.5.1. If a share is less frequently traded than the index, an error in the market model parameter estimation may occur, whereby the β is biased downwards and the α estimate is inflated (see Fowler and Rorke, 1983). However, Connell and Conn found that a change in β had relatively little impact on the change in CAR. In addition, Connell and Conn corrected for nonsynchroneous trading. Thin trading is therefore unlikely to be the sole explanation for the change in the α value over the takeover period.

3) asymmetric incidence of mergers over the business cycle with the result that the efficient frontier of the sample is not randomly changing but subject to consistent downward shifts". (p. 63).

Uncertainty therefore remains as to *why* the alpha values for the bidding companies generally changed so dramatically over the bid period. Connell and Conn concluded that,

> "the evidence on the wealth change for shareholders of acquiring firms remains ambiguous due to the sensitivity of the market model parameters to the event related period chosen to represent equilibrium...". (p. 64).

Servaes and Zenner (1990) analysed "...the returns to buyers and sellers in foreign acquisitions in the U.S." (p. 1). They were particularly interested in establishing what impact the passage of two pieces of tax legislation, the 1981 Economic Recovery Tax Act (1981 ERTA) and the Tax Reform Act of 1986 (1986 TRA), had on the return to targets and bidders in domestic and cross-border acquisitions. "... 1981 ERTA imposed many of the implicit taxes that put foreign investors at a disadvantage." (p. 5). Scholes and Wolfson (1990) argued that the 1986 Tax Reform Act would benefit foreign acquirers more than domestic ones (p. S141)[69].

Servaes and Zenner studied the level of abnormal returns to target and bidding company shareholders in a total of 112 cross-border[70] and 831 domestic acquisitions of US target companies that took place between 1979 and 1988. They applied the market model, based on parameters estimated using 200 daily observations starting 250 days prior to the announcement of the takeover[71]. Over a two-day interval (t-1,

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69 For a fuller discussion of these tax legislations, please refer to Servaes and Zenner (1990) pp. 4-5 and Scholes and Wolfson (1990) pp. S141-S143.

70 Servaes and Zenner also analysed 325 cross-border acquisitions of units and 342 acquisitions of partial ownership interests. The findings for these types of acquisitions will not be reviewed in this thesis.

71 As was discussed in Chapter 3 (see for example the discussion of Franks, Broyles and Hecht (1977)) and in this chapter under the analysis of Mathur, Chhachhi and Sundaram (1989) and Conn and Connell (1990), the share price of the target company often start rising several months prior to the formal announcement of the offer, as the stock market anticipate a takeover to take place. Using market model parameters

t), targets in cross border bids gained on average +13.5%. Over the longer event-window from 20 days prior to the announcement, to "... the resolution of the takeover or the delisting date, whichever comes first" (p. 8), the gain was +26.7%[72]. However, while the *average for the whole period* was 26.7%, the gain to US targets varied substantially over time.

> "In the period 1979-1980, target returns are 38.0%. In the 1981-1986 period, following the 1981 ERTA, target returns drop to 15.2%... After 1986, returns increase to 41.6%." (pp. 10-11).

These changes were highly significant. Servaes and Zenner concluded that the US tax reforms of 1981 and 1986 appears to have had a "... significant impact on the returns of domestic firms subject to foreign acquisitions." (p. 11).

In addition to tax laws, exchange rates were found to have an important impact on the return to US targets. It appears that foreign bidders were willing to pay a higher dollar premium when their local currency was strong in relation to the dollar. In addition to analyse the variation in takeover premiums in cross-border takeovers, Servaes and Zenner also studied how these premia compared to that of domestic takeovers. During the 1979-1980 period, US targets received a 7 percentage point higher premium in cross-border than in domestic takeovers.[73] (This was not, however, statistically significant). While the premiums paid by foreigners fell dramatically after the 1981 Economic Recovery Tax Act was passed (by 17.8

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estimated on a period so close to the announcement (ending less than 2½ months prior to bid) may lead to an inflated α estimate and thus a downward bias in estimated abnormal return.

Servaes and Zenner analysed abnormal returns over two event windows, the longer of which was "... constructed to capture all the announcements relevant to the acquisition and to capture any price run-ups due to leakage." (p. 8). This event-window started 20 days prior to the offer announcement. Due to the findings in previous studies of takeover rumours resulting in an increase in the share price of the target company as much as three months prior to the announcement, it is not clear that an analysis period starting 20 trading days ($\approx$ 1 month) prior to the announcement is sufficient to "... capture all the announcements relevant to the acquisition and to capture any price run-ups due to leakage" (p. 8).

72 The difference in abnormal return from the short to the long event-window clearly shows the importance of a long period for capturing the whole takeover effect.

73 In order to capture true "cross-border-effects" (i.e., difference in abnormal return in cross-border and domestic takeovers), Servaes and Zenner controlled (in the multi-variate regression analysis) for whether the bids were hostile, cash financed and whether more than one company bid for the same target.

percentage points, significant at the 10% level), the premium paid by domestic bidders on average rose by 0.4 percentage points. As a consequence, during this period returns to US target company shareholders were, on average, 10.5 percentage points *higher* in domestic than in cross-border acquisitions. After the passage of the 1986 Tax Reform Act, the relationship again changed, with US targets experiencing an abnormal return 5.9 percentage point higher when the bidder was foreign compared to when another US corporation bid for the US target.

Servaes and Zenner also studied the abnormal return to the 70 foreign bidders that had their shares[74] listed in the US. The return for these bidders during the two-day event-window was -0.15%, which was not statistically significant. However, as did Fatemi and Furtado (1988), Servaes and Zenner found Canadian bidders to perform worse than bidders from other countries.

> "When we subdivide our sample in Canadian and non-Canadian firms, the returns for non-Canadian firms are positive and marginally significant, while the returns for Canadian firms are significantly negative." (p. 22).[75]

Servaes and Zenner published a similar paper in 1994. For the US target companies, the cross-sectional analysis was extended to include an analysis of the target company's *q* ratio. The regressions revealed that target company "...returns are higher when cash is the form of payment, when the acquisition is hostile, and when the target firm has a low *q* ratio". (p. 52).

In the 1990 paper, Servaes and Zenner analysed the returns to 70 foreign companies which made acquisitions into the US over the 1979-1988 period. In the 1994 paper, this sample was increased, by extending the analysis to the 1989-1991

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74 The authors analysed the return to foreign bidders that had "... shares or American Depository Receipts (ADRs) traded on the NYSE, the Amex or over the counter..." (pp. 2-3). Some of these bidders were not necessarily engaged in full takeovers, but in acquisitions of units or partial interests.

75 Servaes and Zenner admit that they have no satisfactory explanation for such a difference, but argue that one explanation may be that "... the U.S. and Canadian economies are closely intertwined and that Canadian firms may be less likely to realize many benefits of FDI [foreign direct investment] from investing in the U.S." (p. 22).

period (note that no such increase in the time frame was made for the US target companies). This increased the sample to 123 foreign bidders. However, only 27 of these were involved in complete takeovers, while the remaining 96 bought units or acquired partial interests in US companies. As reported in the 1990 paper, the mean two-day (t-1, t) CAR was -0.15% over the 1978-1988 period. For the enlarged sample, this rose to +0.05%, indicating that foreign bidders on average performed marginally better in the 1989-1991 period than they did between 1978 and 1988. For the subsample of 27 completed mergers, the mean CAR was +0.44%. None of these estimates were, however, statistically significant.

In her Ph.D. thesis, Biswas (1990) analysed cross-border acquisitions between financial companies that took place between 1977 and 1987. For this time period, 496 cross-border acquisitions were identified. However, her analysis is based on 125 bidding firms[76] and 81 target firms[77] for which (sufficient) share price data were available. For comparison, 159 bidding and 74 target companies in domestic[78] bank takeovers were also analysed.

Biswas analysed the effect on shareholder wealth applying the market model. The α and β parameters were estimated on 71 daily observations, from t-90 to t-20, where t denotes the bid announcement day. The cumulative abnormal return (CAR) was then estimated for the 11 days from t-5 to t+5. As discussed above, such a short event window may not capture the full impact of the acquisition. In addition, parameters estimated over such a short period so close to the bid announcement may be influenced by bid speculation. Biswas partly acknowledged these problems, and

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76 The nationality of the 125 bidding firms were: Australia (2), Canada (17), Hong Kong (7), Ireland (1), Italy (1), Japan (10), Netherlands (2), Singapore (1), Spain (3), Switzerland (6), UK (18), and US (57).

77 The 81 target companies were based in the following countries: Australia (1), Canada (4), France (1), Hong Kong (4), Italy (1), Netherlands (1), Spain (1), Switzerland (4), UK (11), US (48), and West Germany (5).

78 Biswas did not state what she included in this category of 'domestic' takeovers, such as whether this was restricted to domestic US acquisitions, or whether domestic takeovers in other countries were included as well.

argued that the data,

> "... suggests some evidence of a leakage, and that markets are efficient enough for the reaction to be completed by day 0." (p. 76).

In her paper, Biswas argued that,

> "... relative to a domestic acquisition announcement, there is a higher probability of leakages in an international acquisition announcement." (p. 76).

Unfortunately, Biswas did not apply a sufficiently long pre-bid event window to allow for an analysis of this proposition. (This is, however, analysed in this thesis, as discussed in Chapter 7).

The abnormal return to bidding company shareholders differed significantly according to whether the takeover was international or domestic. In cross-border deals, the performance of bidding companies was on average neutral. In domestic acquisitions, however, predators on average lost a significant -0.9% over the 11 day interval.

> "Based on these results, a bidding firm is better off participating in an international than in a domestic acquisition." (p. 78).

Target company shareholders gained significantly in both cross-border and domestic bank mergers. The 6 day CAR (over the period ending with (and including) the bid announcement day) was rather low, at +8.04% in international takeovers and +14.03% for targets in domestic takeovers. Despite the seemingly large additional gain to targets in domestic acquisitions, the negative target company cross-border effect was not statistically significant. Biswas concluded that,

> "... from a target firm's point of view, it does not matter significantly if the bidder is from its own country or from a foreign country. It stands to gain from positive abnormal returns in either case." (p. 81).

Method of payment was found to have a much larger impact on the level of abnormal return to target company shareholders than the nationality of the bidding

company. On average, the CAR was found to reach +14% for cash bids, and only +3.9% for non-cash financed financial takeovers. This finding clearly highlights the importance of controlling for method of payment in estimating the gain or loss to shareholders from takeover activity.

Cakici, Hessel, and Tandon (1991) analysed the level of abnormal returns to target company shareholders from cross-border acquisitions into the US over the 1982-1987 period. For their sample of 94 complete acquisitions[79], the average CAR (using the market model with CAR estimated over a short 12-day period from t-10 to t+1) was +22%. Cakici *et al.* argued that this was "...not much higher than in domestic mergers". (p. 30). However, Cakici *et al.* did not analyse any domestic acquisitions, and the comparison refers to results obtained in other studies, not all of which applied similar methodologies or covered the same time period. These comparisons to domestic studies should thus be interpreted with care.

Cakici *et al.* also established that the average CAR to US targets in cross-border acquisitions varied over time and with the nationality of the bidder. Firstly, they noticed that the average CAR (at 27%) was higher during the 1982-1984 (strong dollar) period than during the 1985-1987 (weak dollar) period (when mean CAR was 19.4%). Finally, the paper identified some interesting national variations, "...with the Japanese paying the highest for mergers, followed by the Canadians, then the British and finally the Germans". (p. 57).

While the 1991 paper analysed the abnormal returns to US *target* companies from cross-border acquisitions, in a subsequent paper, Cakici, Hessel, and Tandon (1996) extended their research to an analysis of cross-border bidding companies. This paper

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79 Cakici *et al.* also analysed 149 cross-border acquisitions of parts or units of US firms. For such transactions the average CAR to target company shareholders was +2.56%.

focuses on the abnormal returns to 195 foreign companies[80] which made cross-border acquisitions into the US during the 1983-1992 period. For comparison purposes, the authors also analysed the abnormal returns to 112 US companies which brought companies abroad during the same 10 year period.

Using the market model (with parameters estimated over days t-140 to t-21), cumulative abnormal returns were estimated for three different event windows, ranging from a 21 day window to a two day window. Their results are reported in Table 4.3.

Table 4.3.

Cumulative Abnormal Returns (CAR) to Successful Foreign Bidders Into and Out of the US 1983 - 1992.

Source: Adapted from Cakici, Hessel, and Tandon (1996), p. 316.

Event window (days relative to bid announcement)	**Foreign Acquisitions of US Firms (N=195)**	**US Acquisitions of Foreign Firms (N=112)**
t-10, t+10	1.96*	-0.25
t-10, t+1	1.05*	-0.04
t, t+1	0.63*	-0.36
* Statistically significant at the 99% level.		

The results indicate that *positive* and significant abnormal return were earned by foreign bidders who acquired into the US. These results contradict the findings of Conn and Connell (1990) with regard to UK acquisitions into the US, as reported above[81]. It is also interesting to note that Cakici *et al.* (1996) found US cross-border

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80 As is discussed further in Chapter 6, there is often difficulties involved in obtaining data for foreign companies. In order to obtain the sample of 195 cross-border bidding companies, Cakici *et al.* (1996), "...started with a sample of over 600 foreign corporate acquisitions in the U.S. but given the difficulty of obtaining data for foreign companies' share prices and the inability to identify exact announcement date in some cases, our sample is reduced...". (p. 314).

81 As discussed further below, most studies of cross-border acquisitions into the US have estimated the abnormal returns to the bidding companies to be either insignificant or (in the case of UK bidders) significantly negative. The only other studies to obtain significant gains to bidders from cross-border acquisitions into the US, are Pettway *et al* (1993) and Kang (1993). It is interesting to note that both of these papers were restricted to Japanese acquisitions of US firms. The evidence does not, however, indicate clear national differences. In the Cakici *et al* (1996) paper, *both* the 85 UK and the 24 Japanese (as well as the 12 Australian) bidders were found to obtain significant, positive, abnormal returns.

bidders to perform *worse* than other cross-border bidders, again a finding inconsistent with Conn and Connell (1990) (and Feils (1993), as discussed below).

In the cross-sectional analysis, Cakici *et al.* (1996) found cross-border bidders not to gain from competitive bids. Variables which were analysed, but found not to be of importance, were: the relative size of target and bidding companies; the strength of the currency (contradicting their previous research as well as e.g., Servaes and Zenner (1990) and Harris and Ravenscraft (1991), as discussed above); and the degree of previous international exposure (possibly contradicting Fatemi and Furtado (1988) and Doukas and Travlos (1988), although Cakici *et al.* (1996) looked at international sales rather than international operations, as measured in the previous papers).

Cakici *et al.* (1996) found bidder abnormal returns to fall after 1986, and argued that this may be an indication of a tax effect (following the 1986 Tax Reform Act). However, as acknowledged by the authors (and discussed more fully by Scholes and Wolfson (1990)), one would have expected cross-border bidders into the US to have performed *better* after the 1986 Act.

Cakici *et al.* (1996) concluded their cross-sectional analysis by acknowledging that the R^2 of all regressions were very small. Thus, "while we have strong evidence of significant positive bidder gains when foreign firms acquire U.S. firms, the evidence supporting determinants of the bidder premia is weak". (p. 20).

Shaked, Michel and McClain (1991) analysed the difference in takeover gains to US targets in cross-border and domestic acquisitions. Shaked *et al.* included in their analysis all takeovers of US listed companies (with assets in excess of $100 million) taking place between 1975 and 1983. One more restriction was imposed, in that,

> "none of the firms were target firms in another takeover attempt within one calendar year surrounding the announcement date." (p. 436).

Imposing these restrictions, Shaked *et al.* got a fairly small sample, comprising

29 cross-border acquisitions, and

84 domestic acquisitions.

Shaked *et al.* applied the market model based on 60 monthly observations for the period (t-72, t-13). Abnormal returns[82] were calculated for a 71 day interval, spanning 35 trading days (approximately 2 months) on either side of the bid announcement day.

During the two months prior to the bid announcement, the level of abnormal return to targets in cross-border and domestic acquisitions were similar (CAR for the period (t-35, t-2) was +15.7% in cross-border and +15.1% in domestic acquisitions). However, during the next few days (covering the bid announcement) cross-border targets gained significantly more than the targets of domestic bidders.

Eight days after the announcement, CAR had risen to +38.2% in cross-border and +34.3% in domestic acquisitions. Subsequent to this, abnormal returns in both foreign and domestic acquisitions flattened out, so that by the end of the investigation period (35 days after the announcement), there was a difference of 5.75 percentage points in the total wealth gain in cross-border and domestic acquisitions (CAR of +40.2% and +34.5% respectively).

Shaked *et al.* obtained an even clearer difference in CAR between cross-border and domestic acquisitions when the observations were split according to the industry sector of the US target, as

> "... segregating the overall sample by industry clearly suggests a higher, and much steeper build-up of cumulative abnormal returns to targets of foreign acquirers." (p. 443).

The most extreme industry was the mining and metals sector. The 6 targets of overseas bidders had by the end of day t+35 gained +66.2%, while the targets in domestic takeovers in the same industry sector gained only an average of +17.6% over the same period. In no other industries were the differences so large. However,

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82 Shaked *et al.* estimated abnormal returns both with the α and β estimated by the market model, and with α set equal to zero. All reported estimates are calculated with $\alpha \equiv 0$.

in all sectors did cross-border acquisitions lead to larger gains to target company shareholders than did domestic acquisitions.

Due to the small sample size, the industry data did not easily lend itself to rigorous statistical analysis. However,

> "though the sample size for each of the industries is limited, the fact that the same patterns are observed, suggests an actual difference between foreign and domestic acquirers." (p. 443).

Shaked *et al.* did not control for differences in bid characteristics (such as different proportion of bids being multiple, revised, cash financed, e.g.) in their analysis of the cross-border effect. They did note, however, that the cross-border effect could not have been due to a difference in the proportion of bids being hostile (assuming hostile bids led to a higher bid premium being paid), as slightly more domestic (19.5%) than foreign takeovers (17.2%) were hostile.

Harris and Ravenscraft (1991) carried out a more extensive analysis of the differences between cross-border and domestic acquisitions of US companies, studying 1,273 publicly traded US firms acquired between 1970 and 1987, of which 159 (12.5%) were acquired by foreign companies. United Kingdom (followed by Canada) was the single most important foreign source country, accounting for a total of 60 acquisitions of listed US companies during the period 1970 - 1987.

Harris and Ravenscraft applied the market model with parameters estimated using daily observations for the period (t-240, t-21)[83] in the analysis of abnormal return to US targets and calculated cumulative abnormal returns (CAR) over two different event windows, (t-3, t+1) and (t-20, t+4), for three different announcement dates: "...

(1) the first offer for the target by any bidder,

(2) the first offer for the target by the ultimate acquirer, and

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83 Once again, the market model parameters were estimated close to the announcement data, which may have resulted in an overestimated α. The level of abnormal return to targets may therefore be underestimated. However, as the estimation period is the same for cross-border and domestic takeovers, the conclusion regarding the difference in abnormal returns (target company cross-border effect) should be unaltered.

(3) the final offer by the ultimate acquirer." (p. 831).

They also calculated CAR for event windows covering all three announcement dates. In the majority of cases (approximately 2/3), these three announcement dates were the same.

In order to test whether any 'cross-border effect' existed, Harris and Ravenscraft chose to control for differences in method of payment, and whether or not the bid was competitive. In addition, they also tested whether the difference in takeover premiums to targets of overseas and domestic bidders changed over time or differed according to which industry sectors the target companies operated in.

Harris and Ravenscraft found target company shareholders to have gained significantly more in cross-border than in domestic acquisitions, with the CAR for the period from t-20 to t+4 days amounting to +39.8% in cross-border and +26.3% in domestic acquisitions. The difference in abnormal returns, although reduced from 13.5 to 10.2 percentage points, remained highly significant when additional variables, such as whether the bids were cash financed or not, and whether multiple bidding occurred[84] were added. The cross-border wealth effect was thus very large (and larger than that found by Shaked *et al.* (1991))[85].

Abnormal returns to targets in takeovers varied significantly over time (average target gains fell after 1980). However, the "cross-border effect" was still significantly

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84 Harris and Ravenscraft argued that targets have been found to gain more in cash bids than in share offers. 88% of cross-border acquisitions into the US were cash financed. Only 4% were financed solely by equity. The comparable figures for domestic US takeovers were 49% and 28% respectively. Slightly fewer cross-border takeovers involved multiple bids than were the case for domestic acquisitions (30% versus. 33%).

85 Harris and Ravenscraft studied the difference in abnormal return to *targets* in domestic and international bids. As mentioned above, they did not analyse return to bidders. Their analysis was therefore rather restricted. Harris and Ravenscraft appreciated that,

> "a full resolution of how the wealth gain is distributed between bidder and target in cross-border takeovers requires stock data from a number of countries." (p. 829).

Despite this, Harris and Ravenscraft went on to argue that,

> "... our estimate yields a lower bound on the total gain [from cross-border mergers], unless the bidding foreign firm incurs a loss in share value. Declines in bidder share value have been observed, but Franks, Harris, and Mayer (1988) show they are largely confined to stock acquisitions. Most cross-border takeovers employ cash." (p. 829).

In this statement, the assumption "...unless the bidding foreign firm incurs a loss in share value" is rather crucial. Statements regarding the overall wealth effect from cross-border acquisitions, without analysing the returns to both parties to the transaction, is of limited merit. (For example, Conn and Connell found bidders in cross-border acquisitions to lose from these transactions).

positive (at 7.9 percentage points) when time was added as an additional explanatory variable in regression analysis. Thus, Harris and Ravenscraft concluded that,

> "our data demonstrate a strong cross-border effect, suggesting that foreign buyers consistently pay substantially higher premiums for U.S. firms than do U.S. buyers." (p. 837).

Harris and Ravenscraft analysed the foreign bids further in an attempt at discovering what may have caused the difference in target wealth gains from cross-border and domestic acquirers. The authors discovered that takeover targets who had allocated a large proportion of their turnover on research and development (R&D) received higher bid premiums than did firms with little R&D involvement. However, the R&D effect appeared to be the same in cross-border and domestic acquisitions. On the other hand,

> "given that cross-border takeovers occur more often in R&D intensive industries than do U.S. takeovers, these results provide support for a special role of R&D in FDI [Foreign Direct Investment]." (p. 839).

The R&D effect may thus account for *some* of the difference in average bid premiums offered by foreign and domestic acquirers.

As was argued by Servaes and Zenner, tax laws may affect domestic and foreign acquirers differently. Harris and Ravenscraft classified (US) Acts according to whether they were thought to favour foreign or domestic acquirers. They then analysed what impact the introduction of these Acts had on the size of the cross-border effect, and concluded (in contradiction to Servaes and Zenner) that,

> "in sum, our results provide no support for increased tax incentives for takeover being linked to higher target gains." (p. 839).

There does thus appear to be disagreement as to whether differences in tax treatment explain the difference in abnormal return to targets in cross-border and domestic acquisitions.

Harris and Ravenscraft analysed whether there were any national differences

(within the cross-border group) in bid premia offered. However, the country dummies were only significant at the 83% level of significance. There was thus only weak evidence for any difference in target bid premium dependent on the nationality of the bidder.

As did Servaes and Zenner, Franks and Harris did find target gains to be,

> "...significantly higher when the buyer's currency is strong relative to the dollar. ...[The data] suggests that a 10 percent ... appreciation of a currency is accompanied by a 2.7 point ... increase in target gains." (p. 841).

Foreign bidders were thus particularly generous when their own currency was strong. When the exchange rate coefficient was added to the analysis of target wealth gains in cross-border takeovers, the R&D-effect lost its significance. The authors did not offer a full explanation as to why foreign bidders paid a higher premium for their targets than did US bidders. Harris and Ravenscraft summarised their article by stating that,

> "... target wealth gains are significantly higher in cross-border takeovers than in domestic acquisitions. This cross-border effect persists, having controlled for industry effects, variation in gains over time, the medium of exchange, and competition in bidding. Foreign companies pay around 10 percentage points (about 50 percent) more than domestic firms in non cash bids." (p. 842).

In his DBA thesis, Sudia (1992) looked at the impact of takeover regulation on the level of abnormal returns to US bidders from acquisitions abroad. The legislative changes analysed were "...the Williams Act of 1968, the related 1970 amendments, state anti-takeover legislation, the 1982 *Edgar versus Mite Supreme Court Decision*, the 1986 *CTS Dynamics Corporation of America Supreme Court Decision*, and major U.S. target countries takeover laws". (p. 1).

Sudia gathered data on 323 US bidding companies which acquired foreign firms

during the 1967 to 1989 period. Sudia applied the market model to calculate abnormal returns, with parameters estimated over days t-210 to t-31. CAR was calculated over days t-30 to t+30. Sudia found that the average CAR to US bidders engaged in cross-border acquisitions changed over time. The mean CAR was -0.16% during the 1967-1968 period, +1.24% for the 1968-1982 period, -2.03% for the 1983-1987 period, and -0.95% for the 1988-1989 period. The changes in the levels of CAR were as Sudia predicted following the regulatory changes. However, none of the CAR estimates (nor the changes from period to period) were statistically significant.

Splitting the sample according to the nationality of the target companies, Sudia established that US bidders, on average, gained marginally (CAR=0.58%) when acquiring Canadian companies, while acquisitions into other markets resulted in insignificant losses.

Cebenoyan, Papaioannou and Travlos (1992) analysed the abnormal returns to target company shareholders in 134 domestic and 73 cross-border acquisitions of US companies over the 1978-1987 period. They applied the market model (with parameters estimated over days t-136 to t-16[86]), and the majority of the analysis was based on a two day event window (days t-1, t). For the whole time period, the average CAR in domestic acquisitions was found to be +16.5%, while cross-border acquisitions resulted in a (statistically significant) additional +6.3 percentage points.

In the cross-sectional analysis, Cebenoyan *et al.* controlled for: the method of payment; changes in the US tax system (following the 1981 and 1986 tax reforms); the strength of the foreign currency relative to the dollar; the industry sector of the target firm; the level of foreign acquisitions in the target industry; the number of bidders; and whether the bidder was domestic or foreign.

One of the main findings of the study, was that "...the wealth gains realized from

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86 Parameter estimation periods close to the bid announcement may lead to biased parameters if the bid is anticipated.

foreign bids, relative to those realized from domestic bids, increase with foreign takeover activity in the respective industry of the target. This positive effect persists even after we account for various control variables". (p. 67). Foreign bidders thus appears to have been prepared to pay a higher premium for US targets if there already was a significant volume of cross-border acquisitions in the industry.

Another interesting finding of their study, was that the strength of the currency, while significant when analysed in isolation, was "...no longer significant in the presence of ... additional factors". (p. 66).

The final major finding of the Cebenoyan *et al.* study, was that while there was a positive cross-border effect for the 1978-1987 period, this was not the case for the 1981-1987 sub-period. During this time period, the cross-border effect was generally negative, and significantly so in some regressions. "...these findings suggest that the general conclusion of previous studies, that cross-border takeovers produce superior wealth gains for U.S. target shareholders, might not hold for takeovers in the 1980s". (p. 66).

Morck and Yeung (1992) analysed the abnormal returns to shareholders of 322 US companies engaged in cross-border acquisitions over the 1978 to 1988 period. The authors employed a very short event window:

> "In the analysis..., we employ a one day event window. Our results do not change qualitatively if the window is widened to three days; however, significance levels fall. Our results become insignificant if a five day window centred on the event date is used". (p. 45).

This limitation should be kept in mind when interpreting the results.

The average abnormal returns to the US bidders was +0.29% (significant at the 90% level) on the day of the bid announcement. The authors did not analyse domestic US acquisitions, but rather made a general reference to other studies as follows: "The stock market appears to view international acquisitions as good news on average - an

apparently better news than domestic acquisitions". (p. 49).

It was further established that companies with high R&D spending performed better than other bidders. R&D was taken as a proxy for intangible assets, which made Morck and Yeung argue that,

> "overall, the results ... are consistent with the internalization theory. That is, a firm's stock price rises upon its announcement of a bid for a foreign target if the bidder appears to possess intangible assets". (p. 53.

On the other hand,

> "...in the absence of intangible assets, international expansion is *at best* a wash-out and may even be viewed by investors as a liability". (p. 54).

Morck and Yeung also discovered that size was negatively related to the level of abnormal returns. Cross-border acquisitions thus appears to have had a greater impact on small than on large bidders. The stock market also reacted more favourably to acquisitions announced by companies in which insiders held a significant proportion of the bidding company's shares. This may indicate that managerial ownership have alleviated some of the concerns about the acquisitions having been undertaken in pursuit of managerial objectives, rather than in an attempt to maximise shareholder wealth.

Finally, Morck and Yeung argued that "...stock financing is not significantly related to abnormal returns. This contradicts with a negative effect found for domestic acquisitions". (p. 51). This *may* be due to the generally small number of cross-border acquisitions where cash is not offered.

In her Ph.D. thesis, Feils (1993) focused on cross-border acquisitions between the UK and the US, although she also included some German acquisitions. Her sample (representing full acquisitions over the 1980 to 1990 period) was as follows:

* 50 US targets and 41 UK bidders in cross-border acquisitions into the US,
* 42 US bidders and 7 UK targets in cross-border acquisitions into the UK,

* 9 US targets acquired by German bidders, and

* 10 US bidders acquiring in Germany.

For comparison purposes, Feils also analysed the abnormal returns to 130 targets and bidders in domestic US acquisitions.

Feils applied the market model with parameters estimated over a very short time period, from day -65 to day -11[87]. Abnormal returns were calculated over days (t-1, t) and (t-5, t+5), using both a domestic and an international market index[88]. "The results are generally robust to the choice of the returns definition and the market index". (p. 7). Consequently, in the following discussion, reference will be made to the results obtained using the narrow event window (t-1, t) using the international market index.

Looking at the target companies in cross-border acquisitions, Feils found UK targets to gain significantly less than US targets. The average two-day CAR to US companies acquired by UK firms was +25.52%, while UK targets on average gained +16.33% when acquired by US corporations. These results are consistent with those of Conn and Connell, although they found the difference in abnormal returns to US and UK targets to be even larger.

Looking more specifically at the US target companies, it was established that, while they on average gained +25.75% in cross-border acquisitions, they gained marginally more, +25.90% in domestic acquisitions[89]. "Overall, the results show no significant difference between the cumulative abnormal returns to the U.S. target firms in domestic and international acquisitions". (p. 104).

Turning to the bidding companies, Feils established that all categories of bidders

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87 As previously mentioned, there is a potential danger in estimating market model parameters, especially for target companies, so close to the bid announcement, as the parameters may be contaminated if the bid is anticipated by the market.

88 The international market index was calculated as the value-weighted average of the indices in Australia, Canada, France, Germany, Japan, Switzerland, UK and US.

89 US targets gained the most in the small number of German acquisitions. There is thus some indication that the size of any cross-border effect may be influenced by the nationality of the foreign bidder.

on average lost from their transactions. "The losses to U.S. acquiring firms in domestic acquisitions are significant". (p. 108). Similar (although not significant) losses were encountered by US bidders in cross-border acquisitions. British bidders lost marginally more than the US bidders from cross-border acquisitions. Again, these findings are consistent with Conn and Connell (1990) who established that UK bidders generally performed worse than US bidders in cross-border acquisitions.

Where sufficient data was available, Feils also calculated the average *combined* (value-weighted) CAR for the matched pairs of bidding and target companies. She established that, due to the large gains to the US targets, acquisitions by UK companies of US targets on average resulted in a net wealth *gain* of +5.19%. On the other hand, cross-border acquisitions by US companies into the UK on average resulted in an overall *loss* of -2.81%. The largest overall gains were, however, observed in *domestic* US acquisitions, which on average resulted in an overall increase in shareholder wealth of +5.69%.

Feils also analysed the impact on the level of abnormal returns caused by various bid characteristics. She concluded that,

> "no significant differences in gains from domestic and international acquisitions are found after considering the impact of the number of bidders, form of payment, level of hostility, the relatedness of the businesses of the acquiring and target firms, and their relative size. The gains to the combined firms are larger in multiple bidder acquisitions and positively related to the relative size of the target and the acquiring firms.
>
> Deviations from the average exchange rate and the relatedness of the businesses have no explanatory power...". (p. iv).

In her Ph.D. thesis, Song (1993) analysed cross-border acquisitions into the US over the 1981-1990 period. The analysis is restricted to 118 transactions for which data was available for both the US target company and for the foreign acquiring

company. Song applied the market model, with α and β being estimated over days t-70 to t-11, where t refers to the day of the bid announcement[90].

The overseas bidding companies, on average, observed a negative 2-day (t-1, t) CAR of -0.72% (significant at 5% level), and -0.41% over a 21-day period (t-10, t+10). Further, Song found that the "acquirer's CAR is significantly higher if the firm already has an establishment in the U.S.". (p. 166). These results contradict those of Fatemi and Furtado (1988) and Doukas and Travlos (1988), who argued that US bidders performed better when entering new markets.

Target companies, on average, earned large, and highly significant, positive abnormal returns. Over the 2-day window the CAR was +24.78%, and +36.34% over the 21-day window. The large difference in CAR between the two event windows highlight the importance of extended event windows for capturing the whole wealth effect. Indeed, as acknowledged by Song, even her 'long' event window (from t-10 to t+10 days) may be too short for capturing the full impact of the acquisitions.

Song further looked at the value changes for paired bidding and target companies. The change in shareholder wealth was calculated over the period from 10 days prior to the initial announcement to 10 days after the successful bid. The average CAR was 6.30% of the combined values of the bidding and target companies. Target companies gained more if the bid was competitive, but bidding companies did not perform worse in competitive bids. Consequently, the *combined* gain was significantly higher in multiple-bidder transactions than in single-bidder transactions.

Swenson (1993) analysed the abnormal returns to US targets in 477 domestic and 226 cross-border acquisitions over the 1974-1990 period. Swenson applied the market model (with parameters estimated over days t-250 to t-21 days), and calculated the

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90 Estimating the market model parameters over a period so close to the bid announcement may cause problems if the bid is anticipated. Indeed, Song observed that for the target companies, significant positive abnormal returns were observed as early as t-10. "Hence abnormal returns measured over event periods beginning 10 days before the initial announcement seem to understate the true return to target shareholders in a takeover". (Song (1993) p. 135).

CAR over days t-20 to t+5.

Swenson acknowledged two potential limitations of her methodology. Firstly, she recognised the potential for information leakage prior to the official announcement of the bid and argued that,

> "as long as investors believe that their firm could become a takeover target, a fraction of potential takeover gains will be capitalized in the current stock price. ... If there is any anticipation that a firm may be acquired, the observed effect of the takeover announcement will be less than the economic value of the event itself". (pp. 270-271).

Thus, measuring the CAR from 20 days prior to the day of the bid announcement may be insufficient to capture the whole effect of the bid.

In addition, Swenson acknowledged the limitation of restricting the analysis to target companies. "Since the division of gains is not likely to be divided between the bidder and target in a systematic fashion, target shareholder gains are an imperfect measure of total value created by the acquisition". (p. 271).

On a descriptive level, Swenson established that foreign bidders generally: had a larger pre-bid stake in the target; faced competitors less often; and acquired targets with higher PE ratios, than did domestic acquirers.

On an overall basis, "...the premium paid in foreign transactions [40.9%] exceed the premium paid by domestic purchasers [30.1%] by 10.9 percent". (p. 268).

Swenson also looked at the effect of bid characteristics. US target companies on average gained an extra +9.2 percentage points in competitive as compared to single bidder transactions. However, even after controlling for this and other variables (such as whether or not the bid was challenged by regulatory authorities, the method of payment, and whether the target company was a manufacturer or not), the cross-border effect still amounted to +9.3 percentage points. However, this additional premium received with foreign bidders was not constant over time. "...it is apparent that the foreign premium was highest in the 1970s, fell in the early 1980s, but

increased again in the late 1980s. These results cast doubt on the overpayment hypothesis". (p. 270).

Swenson argued that the variation in the level of the cross-border effect could, at least in part, be attributed to the varying strength of the dollar. "The results show that target shareholder wealth gains in foreign acquisitions are much larger in weak-dollar years. In fact, there are no additional wealth gains for target shareholders in foreign acquisitions during strong-dollar years". (pp. 273-274).

There are some complications in assessing *why* the strength of the currency should have an impact on the level of target company abnormal returns.

Firstly, it may be difficult to determine when a currency is 'strong'. Swenson defined the dollar as strong when the real effective exchange rate was above the average exchange rate for the 1974-1990 period. While it may be possible, *with hindsight*, to use this approach for determining the strength of the currency, it is probably difficult for bidders, at the time of the takeover, to determine whether the currency is strong or weak.

Secondly, a fall in the dollar should not create bargains to foreign bidders, as it "...reduces the value of the expected foreign currency profit stream at the same time that the foreign currency price of the U.S. target falls". (p. 272). Foreign bidders should thus only be at a competitive advantage relative to domestic bidders when the dollar is *temporarily* weak. In reality, it may be difficult to assess whether the apparent weakness of the currency is transitory or permanent.

Finally, Swenson did not discuss why the foreign bidders paid a higher premium when the dollar was weak. While the strength of their home currency may have given foreign bidders a competitive advantage over domestic bidders (if one accepts the above argument), it is less than clear as to why the foreign bidders passed on this advantage to the target companies in the form of an additional takeover premium.

Consequently, while Swenson identified an interesting correlation between the size of the cross-border effect and the strength of the currency, questions still remains as

to why such a relationship appears to be present.

A final aspect considered by Swenson, was whether or not the overseas bidder had prior experience in the US market. While Fatemi and Furtado (1988) and Doukas and Travlos (1988) found US bidders to perform better when entering new markets, Swenson found that "...when foreign bidders were distinguished according to their presence in the U.S. market, no differences in target shareholder wealth gains were found". (p. 279). Thus, while the degree of prior international experience may be of some importance to the bidding companies, it does not appear to be of importance to the US target companies.

Marr, Mohta and Spivey (1993) analysed the wealth effects to target company shareholders from 90 cross-border acquisitions into the US over the 1975 to 1987 period. For comparison purposes they also analysed 87 target companies in domestic US acquisitions. These domestic acquisitions were, for an unexplained reason, drawn from a shorter period (1979 - 1987). This is unfortunate, as a direct comparison of results *may* not be valid as the two samples do not cover exactly the same time period.

Marr *et al.* did not analyse the gains or losses to the foreign bidding companies, but argued that this was not a major limitation of their research.

> "Unfortunately, data on foreign firm's wealth effects are not readily available. The empirical evidence from previous studies show that the gains to bidders are negligible... Furthermore ... study of tender offers ... find that target shareholders capture most of the gains from tender offers. Therefore, the wealth effects to target shareholders should be a good measure of the premium from a takeover". (pp. 290-291).

As is shown in the empirical section of this thesis, such an assumption may not be valid.

Marr *et al.* applied the market model (estimated over the period from 210 to 60

days prior to the bid announcement). Abnormal returns were calculated over the interval from 60 days prior to, to 20 days after the day of the bid announcement. Their results are given in Table 4.4. As can be seen, "the wealth effects on the announcement of a takeover is significantly higher for foreign takeover than for takeovers by domestic firms". (p. 285). There was thus clear evidence of a positive cross-border effect. Marr *et al.* also found that "...foreign bidders pay a slightly higher premium for targets whose operations are related to their own". (p. 293).

Table 4.4.

Cumulative Abnormal Returns to US Firms Taken Over By Foreign Bidders Versus US Firms Taken Over By Domestic Bidders - 1975-1987.

Source: Adapted from Marr, Mohta and Spivey (1993).

		Percentage Cumulative Abnormal Returns (CAR) over Test Period			
	Sample size	**t-60, t**	**t-1, t**	**t+1, t+20**	**t-60, t+20**
Cross-border targets	90	39.01%	11.82%	6.04%	45.05%
Domestic US Targets	87	34.02%	6.27%	0.24%	34.26%
Z-score of difference in CAR		1.27	2.44	2.75	2.33

Marr *et al.* also looked at the characteristics of companies taken over by foreign firms as compared to (a sample of 363) companies not taken over. The main findings of the authors was that "...foreign firms take over US firms whose operations are related to their own and US firms with low market-to-book values". (p. 293).

Pettway, Sicherman, and Spiess (1993) analysed acquisitions of US companies by Japanese firms. The time period covered was October 1981 to September 1991,

although the majority of transactions took place during 1988 and 1989. Their sample of complete mergers was relatively small, consisting of 10 US targets and 16 Japanese bidders[91].

Abnormal returns were calculated using the market model with parameters estimated over days t-201 to t-22. For the US targets, while the two-day abnormal returns was +37.00%, the CAR over the total event window (t-21 to t+20 days) was substantially higher, at +57.62%, significant at the 99% level[92]. These abnormal return estimates are very high, and higher than what has generally been found in domestic US studies, although Pettway *et al.* did not include an analysis of domestic takeovers.

Another interesting finding in the Pettway *et al.* study, was the substantial gains observed for the *bidding* companies. Over the 42 day event window, Japanese bidders gained +6.91%, significant at the 85% level.

Pettway *et al.* carried out cross-sectional analysis in an attempt to explain the cumulative abnormal returns to US targets and Japanese bidders. They found that "wealth gains to Japanese buyers in mergers are higher when the medium of exchange is all cash and larger when the firm diversifies. The gains to U.S. sellers are less positive when the buyer is large relative to the seller...". (p. 92). However, none of these variations were statistically significant. Indeed, as Pettway *et al.* acknowledged, "...the cross-sectional models employed ... do not have much explanatory power". (p. 89).

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91 Pettway *et al.* also analysed 37 Japanese bidders and 30 US targets in unit transactions (whereby a part, rather than the whole US company, was acquired). A review of such transactions is outwith the scope of this thesis. It may be worth noting, however, (particularly in light of Kang (1993) discussed below) that both bidders and targets gained significantly less in such transactions than in complete mergers. In the unit transactions, mean CAR was -1.24% for Japanese bidders, and +13.25% for US targets.

92 The large difference in the total event widow CAR and the two-day abnormal return highlights the danger of analysing takeover effects over short event windows, as applied in e.g., Doukas and Travlos (1988) and Biswas (1990).

As did Pettway *et al.*, Kang (1993) studied acquisitions into the US by Japanese companies. His sample, for the 1975-1988 period, consisted of 119 Japanese bidders and 102 US targets. However, for only 30 Japanese bidders and 21 US targets did these transactions involve complete mergers (the remaining transactions included partial sales (less than 50%), and acquisitions of subsidiaries). Rather disappointingly, Kang did not provide separate results for the various categories of transactions.

For comparison purposes, Kang also studied 119 bidders and 102 targets in domestic US acquisitions. These companies were matched to the companies engaged in cross-border acquisitions. The matching criteria included whether or not it was a full merger.

Kang applied the market model (estimated over days t-200 to t-21), and calculated CAR over a number of different event windows. His overall conclusions were similar to those reached by Pettway *et at.* (1993) that "Japanese mergers and acquisitions in the U.S. create statistically significant gains for both Japanese bidders and U.S. targets". (p. 345).

The three-day CAR (t-1, t+1) for Japanese bidders amounted to +0.51%, significant at the 90% level. US bidders in domestic transactions, on the other hand, lost an insignificant -0.10%. The difference in performance was significant at the 95% level.

Over the three-day event period, US targets gained +9.42% in cross-border transactions and +7.01% in domestic deals, thus indicating a positive cross-border effect. However, when calculating abnormal returns over a longer event window (t-20, t+20), the situation reversed, with target companies receiving a marginally higher CAR in domestic than in cross-border takeovers (+13.71% versus +12.41%). (All the target CAR estimates are significant at the 99% level). Kang concluded that "...shareholders of U.S. targets of Japanese bidders do not earn higher abnormal returns than those of targets in the control sample". (p. 367).

Kang carried out further analysis for a subsample of "...68 matched nonfinancial

bidder and target pairs". (p. 349). His main findings were: "...returns to Japanese bidders and the portfolio of Japanese bidders and U.S. targets increase with the bidder's leverage, the bidder's ties to financial institutions through borrowings, and the depreciation of the dollar in relation to the Japanese yen". (p. 345).

Manzon, Sharp, and Travlos published a paper in 1994 based on the same data as used by Doukas and Travlos (1988). In this paper, however, the aim was to look specifically at "...the effect of tax factors on the equity values of U.S. multinational corporations making foreign acquisitions". (p. 1893). The sample is restricted to 103 acquisitions made by 76 US firms for which data was available on the amount of foreign income and foreign tax, as well as the total value of the takeover.

Manzon *et at.* argued that "abnormal stock returns are found to be related to a tax variable that captures differences in the international tax status of acquiring firms but not related to a naive tax variable that captures differences between tax rates in target countries and the United States". (p. 1893). More specifically, "an acquisition that enhances a firms' ability to repatriate funds to the United States results in a favorable market reaction, while one that is likely to result in income that will trigger additional U.S. taxes upon repatriation results in an unfavorable market reaction". (p. 1903).

Markides and Ittner (1994) analysed the gains and losses to 276 US companies which acquired companies abroad during the 1975-1988 period. The study applied the market model, with parameters estimated over days t-270 to t-90. Abnormal returns were calculated over a very narrow event window (days t-1, t), although Markides and Ittner argued that "...our results do not change significantly when a broader window is used". (p. 350).

Overall, Markides and Ittner found the US bidders to have gained from the transactions: the two-day CAR was +0.32%, significant at the 90% level. However, this average masked an important distinction between acquisitions of firms within or

outwith the bidders line of business: "...the two-day abnormal return for related acquisitions is .55%... By contrast, the corresponding abnormal return for unrelated acquisitions is -.87%...". (p. 355). Both values were statistically significant.

In the cross-sectional analysis, several other variables were found to be significant. Markides and Ittner established that US bidders performed better when their industry (and that of the target) was highly concentrated and had a high advertising intensity. Somewhat contradictory to the findings of Fatemi and Furtado (1988) and Doukas and Travlos (1988), it was also found that bidders gained more if they already had international experience. Large bidders (as measured by turnover) and bidders acquiring large targets (in relation to their own size) performed better than other bidders. Finally, bidders gained more when the dollar was strong relative to the currency of the target company. Contrary to their expectations, the R&D intensity and the tax system were not found to have a significant impact on the abnormal returns to US bidders engaged in cross-border acquisitions.

Lin, Madura and Picou (1994) analysed the abnormal returns to US bidders from cross-border acquisitions announced during 1980 to 1989. Using the market model with parameters estimated over days t-220 to t-21, their sample consisted of 119 successful takeover bids. However, rather surprisingly, no average abnormal return is reported for this sample. Rather, their analysis is split into two distinct sections; firstly, the abnormal returns associated with acquisitions into specific countries, and secondly, the impact of the Single European Act for acquisitions into the EEC.

Looking firstly at national variations, it is established that the acquisition of 18 German companies resulted in a mean pre-bid (t-20 to t-2 days) CAR of +2.39%, while the two-day event period CAR (t-1, t) was +1.27%, significant at the 95% level. The paper also reported results for acquisitions of 44 UK and 27 Canadian companies. However, this section of the paper suffers from numerous errors, which complicates

interpretation of the results[93].

With regard to the acquisitions into the UK, these were associated with a large (but statistically insignificant) negative pre-bid CAR of -1.87%. However, confusion also surrounds the bid announcement abnormal returns[94].

Turning to the analysis of the Single European Act, the authors split the 92 acquisitions for EEC companies into those announced prior to 1 January 1986 and those announced after. They established that, while the average event-period CAR was insignificantly positive for bids prior to 1986, they were significantly negative (at -0.86%, significant at the 90% level) for bids announced between 1986 and 1989. However, once two more variables were included in the analysis, the method of payment and whether or not the acquirer had prior experience in the country of the target, none of the explanatory variables were found to be significant.

Dewenter (1995a) analysed the abnormal returns to US targets in cross-border and domestic acquisitions over the 1975-1989 period. The analysis was restricted to the chemical industry (81 domestic and 35 cross-border acquisitions), and the retail sector (213 domestic and 55 cross-border transactions). While such a categorisation (based on SIC codes) may have some merit, there are potential problems in classifying companies into discrete industries, particularly for diversified companies.

Dewenter applied the market model (with parameters estimated over days t-270 to t-21), and calculated cumulative abnormal returns over days t-20 to t+10. The mean CAR for the US targets in the chemicals industry was +23.5% with domestic bidders

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93 Firstly, the pre-bid event period is reported in their table 2 to extend from t-30, rather than from t-20, as reported in the text. This is presumably simply a typographical error. Secondly, there appear to be errors regarding the signs of the abnormal returns and the associated t-statistics. For example, for acquisitions into Canada, the average pre-bid CAR is reported as a negative -0.54%, but with a positive t-statistic of +0.29. Presumably both numbers should have the same sign, and it is unclear whether the abnormal return was really positive or negative. What is clear, however, is that acquisitions of Canadian companies were associated with an average two-day CAR of -0.25%, statistically insignificant.

94 The AR for t-1 is reported as a positive 0.5%, but with a negative t-statistic of -1.70, significant at the 90% level. As the t=0 CAR was +0.05% and the two-day CAR -0.45%, it appears that the t-1 AR was negative, rather than positive as reported. However, not only the table, but also the text suggests that the t-1 abnormal return was positive: "Acquisitions of U.K. companies are associated with significant positive abnormal returns on day -1". (pp. 68-69).

and +21.3% with foreign bidders. There was thus an insignificant *negative* cross-border effect of 2.2 percentage points. In the retail sector, however, the cross-border effect was positive, although still insignificant, with cross-border acquisitions resulting in a CAR of +22.2%, while domestic acquisitions were associated with a +20.6% CAR. Dewenter concluded that "a comparison of unconditional mean takeover premia levels indicates that for these two industries, shareholder wealth gains are not statistically higher when the buyer is foreign". (p. 430).

In a further analysis of her results, Dewenter (1995a) tested whether target company returns were influenced by changes in the US tax laws during the period of study. She concluded that "...the results confirm prior work that shows the U.S. tax regime changes in the 1980s provide no explanatory power for the difference between domestic and foreign takeover premia levels". (p. 439). These findings may appear to contradict those of Servaes and Zenner (1990), discussed above, who studied the impact of the 1981 Economic Recovery Tax Act and the 1986 Tax Reform Act on the abnormal returns to US targets in cross-border acquisitions. They concluded that these tax changes appeared to have had a "...significant impact on the returns of domestic firms subject to foreign acquisitions". (Servaes and Zenner, 1990, p. 11). It should be remembered, however, that Servaes and Zenner did not analyse domestic acquisitions, and could thus not comment on the impact of these changes on the size of any cross-border effect.

While Dewenter did not find the US tax system to be of importance, in her cross-sectional analysis she did establish that certain cross-border effects were present, once various bid characteristics were controlled for. "Foreign investors do appear to pay more in hostile transactions, and less with rival bidders...". (p. 439). It was also suggested that foreign bidders pay less than domestic bidders in equity financed transactions, although this was difficult to test statistically, due to the small number of share financed cross-border acquisitions. Thus, while Dewenter failed to establish the presence of a significant cross-border effect at the overall level, she found that "...the

sensitivity of takeover premia to standard transaction characteristics does appear to vary with buyer nationality". (p. 439).

In a different paper, Dewenter (1995b) analysed the effect of exchange rates on the flow of FDI into the US. The paper, however, also included an analysis of the CAR to 603 US companies acquired in cross-border acquisitions[95]. The average 31-day (t-20, t+10) CAR amounted to +22.8%, similar to that observed for the chemical and retail sectors, as discussed in the 1995a paper. Cross-sectional analysis revealed that target company abnormal returns were significantly higher in full (as compared to partial) acquisitions, in hostile (versus friendly) bids, and where there was no equity element to the offer. Target company shareholders also gained marginally more in competitive bids, although this variable was not statistically significant.

Eun, Kolodny, and Scheraga (1995) analysed the gains and losses to both bidding and target company shareholders in cross-border acquisitions into the US over the 1979-1990 period. Abnormal returns were calculated using the mean-adjusted return technique. This model, which assumes that the mean historical share return is a good prediction of future share return, is rather unusual, as it fails to allow for general movement in the stock market index.

For a sample of 213 US targets, Eun *et al.* calculated the mean cumulative abnormal return (CAR) over the period from 5 days prior to the first offer to 5 days after the last, successful, offer, to be +37.02%. The average CAR for the 117 foreign bidders, was -1.2%. However, this average masked large national variations, with Japanese bidders on average gaining a significant +3.62%, while British bidders on average lost a significant -4.28%.

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95 The sample of 603 US targets included the 90 analysed in the 1995a paper. The 1995b paper applied the same event study methodology, but did not include a comparison to US target companies in domestic US acquisitions.

Eun *et al.* also analysed the combined wealth effects for bidders and targets for a total of 103 transactions for which data was available. They found that "the combined average wealth gain is $68.18 million...". However, once again there were large national variations. Indeed, in value terms, British bidders lost more than US targets gained, leading to an average combined wealth reduction of -$28.36 million. On the other hand, Japanese acquisitions on average resulted in a joint gain of +$398.49 million. The overall loss established for UK acquisitions into the US is contrary to the findings of Feils (1993), who established that such acquisitions on average resulted in an overall *increase* in wealth of +5.19%.

Eun *et al.* found that bidding companies performed better if the target company had spent a large proportion of their sales on research and development (R&D). Indeed, the results "...suggest that the country effect may be a proxy for the target's R&D intensity". (pp. 18-19). In an attempt to explain these results, Eun *et al.* refer to work by Lang, Stulz and Walkling (1989, 1991), Servaes (1991) and Doukas (1995b), who "...suggest that a firm's R&D/sales ratio may indicate not only the firm's R&D intensity but also the quality of management...". (p. 16). Eun *et al.* goes on to argue that,

> "...well-managed (high R&D/sales) Japanese firms are likely to face positive investment opportunities and, as a result, their decision to acquire U.S. targets with above average R&D would be viewed positively by the stock market. In contrast, poorly managed (low R&D/sales) British firms, which tend to acquire less R&D intensive targets, are likely to face limited investment opportunities, and thus have a greater proclivity to undertake negative NPV projects. ... This interpretation of our empirical findings suggests that in order to create synergy gains from cross-border acquisitions, acquirers must possess the skills necessary to effectively redeploy the targets' intangible assets toward higher-valued uses". (pp. 16-17).

There are a number of problems with this interpretation of their results.

Firstly, there is a difficulty with the definition of "quality of management", and the alleged relationship between R&D/sales and managerial quality. Eun *et al.* claim that e.g., Lang *et al.* (1989, 1991), Servaes (1991) and Doukas (1995b) had suggested such a link. This appears to be at best a misinterpretation of these papers, which all look at the impact of Tobin's *q* on takeover-related returns to shareholders. None of these papers even mentions the words research or development. It is far from clear that R&D can be taken as a surrogate for *q*, at least not without any explanation.

Secondly, these papers do not *test* whether *q* is related to managerial performance, nor do they define managerial performance. Rather, such a relationship is put forward as a *proposition*. For example, Servaes (1991) wrote that "if *q* is interpreted as a measure of managerial performance...". (p. 409), while Doukas (1995b) argued that "if Tobin's q is used to separate firms into value maximizers (i.e., well-managed firms) and overinvestors (i.e., poorly-managed firms) the results indicate that bidder abnormal returns are substantially higher for value maximizing firms than for overinvesting firms". (p. 14).

Thirdly, the above quote by Eun *et al.* implies that not only the level of target R&D, but also the level of *bidder* R&D to be an important factor influencing the level of abnormal returns. However, contrary to this, their regressions (table 6) indicates that the level of acquirer R&D is marginally and insignificantly *negatively* correlated with the overall wealth gains from the acquisition.

A further problem is that the level of R&D expenditure may vary widely between industries. If one is attempting to evaluate managerial performance based on R&D/sales, one would expect an adjustment for industry averages. (Such an adjustment was made by Servaes (1991) when evaluating the impact of *q* ratios).

Consequently, while Eun *et al.* establishes an interesting relationship between target company R&D and abnormal returns, the paper offers a rather questionable explanation for these results.

Cheng and Chan (1995) analysed cross-border acquisitions into the US. They did not include the foreign bidders in their study. Their justification for this was, rather simplistically that,

> "the limited availability of data on foreign bidders poses problems in conducting in-depth analysis on the subject. Since data on US firms are available, focusing on international takeovers of US target firms allows us to examine indirectly the behaviour of international bidding firms". (p. 637).

Their sample consisted of 70 large (purchase price minimum $100 million) cross-border acquisitions of US companies over the 1985-1990 period. 29 (41.4%) of these acquisitions were carried out by UK bidders.

Firstly, Cheng and Chan analysed the size of the percent takeover premium[96]. It was established that the average premium was 45.2% in these cross-border acquisitions. This compares to a premium of 39.7% for 1,789 domestic acquisitions (as reported in *Mergerstat Review*). Thus, "...it seems that the premium paid in international takeovers is a little higher than [that observed in domestic] US takeovers". (p. 648).

Secondly, Cheng and Chan undertook a more common market model event study, with parameters estimated over days t-240 to t-41. While the whole event window stretched from t-40 to t+3, the majority of the analysis is based on the three-day period from t-1 to t+1. "For the -1 to 1 interval, the ...[mean CARs] are 21.80% ... for the whole sample and 20.16% ... for the UK sample. These results suggest that US targets of UK takeover seem to receive smaller abnormal returns than US targets of international takeovers do in general". (pp. 650-651).

Finally, Cheng and Chan compared the abnormal returns to US targets in cross-border acquisitions to the gains encountered in 219 domestic US acquisitions. While the average CAR to US targets in cross-border acquisitions was +21.8%, the average

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96 The takeover premium was defined as the price paid for the target less the share price five days prior to the bid announcement, divided by the same pre-bid value.

gain was only +12.7% in the domestic acquisitions. There was thus some indication of quite a sizeable cross-border effect. However, Cheng and Chan did not advocate such an explanation. They "...believe that the higher abnormal returns received by US targets in international takeovers are not necessarily due to overpayment ... by international bidders. In fact, it is probably due to the type of takeovers and other determinants (like payment methods) that result in a higher abnormal return in the international sample". (p. 652).

It should be noted, however, that the analysis in this part of Cheng and Chan's paper is rather weak. Firstly, while the cross-border takeovers took place during the 1985-1990 period, the sample of domestic acquisitions related to the period 1981 to 1987. No explanation was given as to why the two samples did not cover the same time periods. A straight comparison may therefore be problematic.

Secondly, Cheng and Chan argued that the type of takeover may have been of importance, "as mergers normally receive lower takeover premiums...". (p. 652). More of the cross-border transactions (66.2%) than the domestic transactions (48.6%) were mergers. Consequently, if returns are predicted to be lower in mergers than in other types of takeovers, one would expect the cross-border sample to display a *lower* CAR than the domestic sample. As Cheng and Chan appears to have had data on the type of transaction, they could have *tested* for the significance of this variable by applying cross-sectional analysis.

Waheed and Mathur (1995) analysed the wealth effects of international expansion by US banks undertaken during the 1963 to 1989 period. Waheed and Mathur applied the market model but, as did Conn and Connell (1990) and Connell and Conn (1993), estimated the parameters over periods both prior to and after the bid announcement[97].

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97 The results reported are based on an estimation period from t-170 to t-21 and t+21 to t+170. "Other estimation periods of t=-150 to t=-30 and t=30 to t=150, and t=-100 to t=-21 and t=21 to t=100 were also used with similar results being obtained". (p. 834).

The average two-day (t-1, t) cumulative abnormal returns associated with the 259 announcements of foreign expansion was -0.21%. This sample, however, included not only acquisitions, but also establishment of representative offices, branches, joint ventures and subsidiaries. Looking specifically at the 80 cross-border acquisitions, the US banks, on average, encountered a negative CAR of -0.51%, significant at the 99% level. Waheed and Mathur concluded that the "...results suggests that the costs and risks associated with foreign expansion outweigh the diversification benefits expected from foreign expansion". (p. 840).

Datta and Puia (1995) analysed the abnormal returns to shareholders of 112 US companies which acquired companies abroad during the 1978 to 1990 period. Datta and Puia applied the market model, with parameters estimated over days t-180, t-31. They calculated abnormal returns over several event windows, ranging from a short two day (t-1, t) to a 'long' 61 day window (t-30, t+30). Their reasoning for applying several event windows related to the degree of market efficiency, and argued that,

> "the two-day window ... is used to identify the immediate market reaction to the acquisition announcement, based on the assumption that all relevant information regarding the acquisition becomes public on the day of the announcement and the market adjusts fully to that information. However, arguments have been made that markets are not always capable of predicting the full consequences of the acquisition immediately upon learning of it... Hence in addition to the narrow window ... this study employed a number of longer time periods..., on the assumption that they provide more realistic pictures of wealth effects in cross-border acquisitions" (p. 347).

Datta and Puia established that cross-border acquisitions, on average, resulted in statistically significant negative abnormal returns to the US bidding companies (CAR of -0.42% and -2.54% for the short and long event window, respectively).

The research also included an analysis of the difference in abnormal returns in related and unrelated acquisitions. In related acquisitions (classified according to the existing operations of the target and bidding companies), the abnormal losses were small and insignificant, with the cumulative abnormal return over the period from t-30 to t+30 days amounting to -1.01%. However, unrelated acquisitions resulted in large, significantly negative abnormal returns (-9.10%). The difference in abnormal returns was significant at the 99% level for the long event windows.

A further variable analysed by Datta and Puia (1995), was the effect of 'cultural distance' between the US and the country of the target company. The cultural distance was classified according to "...four cultural dimensions... [These] are power distance, uncertainty avoidance, individuality, and masculinity/femininity". (p. 344). Using this classification process, acquisitions into the UK, Canada and Australia[98] were considered to be in the low cultural distance group, while all other countries fell into the high cultural distance group. (p. 348).

The results revealed that cumulative abnormal returns in acquisitions belonging to the high cultural distance group were significantly negative (-5.85% over t-30, t+30)), while there were no significant abnormal returns in acquisitions of companies in the low cultural distance group (-0.39%). Datta and Puia (1995) concluded that their findings "...lends credence to the theory that cultural fit plays an important role in cross-border acquisitions" (p. 354), and that acquisitions of target companies based in countries significantly different from the country of the bidding company result in significant losses to bidding company shareholders.

4.4. Conclusion

This chapter contains a discussion of previous literature on cross-border acquisitions, with particular emphasis on the level of abnormal returns to target and

98 From this classification, it appear that cultural distance is associated with language, as all English speaking countries were classified as having low cultural distance from the US, while all non-English speaking countries were considered to belong to the high cultural distance group.

bidding company shareholders, as well as a discussion of the extent to which these abnormal returns are different from those observed in domestic acquisitions.

A summary of the overall findings is provided at the start of this chapter (see Tables 4.1 and 4.2). However, due to the different methods applied in the different studies, comparisons should be undertaken with care. As indicated in Table 4.1, substantial controversy surrounds the issue of whether shareholders of bidding companies gain or lose from cross-border acquisitions, with almost an equal number of studies indicating gains as there are studies indicating losses.

With regard to target company shareholders, all studies indicate that these gain significantly at the time of the bid announcement. While most studies suggest that returns to target company shareholders are higher in cross-border than in domestic acquisitions, the target company cross-border effect is frequently not significant.

Overall, the results, predominately based on the US market, suggest that target company shareholders gain significantly from cross-border acquisitions (and generally gain more than what is observed for target company shareholders in domestic acquisitions), while the returns to bidding company shareholders are more varied. These results are, however, based on the overall, mean, findings. In addition, several of the papers highlighted the importance of controlling for various bid characteristics. The main variables controlled for are discussed below.

Variations were found with regard to the nationality of the cross-border bidders by Fatemi and Furtado (1988), Conn and Connell (1990), Cakici *et al.* (1991 and 1996), Harris and Ravenscraft (1991), Sudia (1992), Feils (1993), Eun *et al.* (1995), and Cheng and Chan (1995). Other studies, such as Lin *et al.* (1994) found abnormal returns to vary according to the nationality of the target companies[99].

Several studies, such as Wansley, *et al.* (1983), Tessema (1985), Biswas (1990), Harris and Ravenscraft (1991), Cebenoyan *et al.* (1992), Feils (1993), Swenson

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99 Several other studies have analysed the impact of the location of the target companies, although these studies, such as Doukas and Travlos (1988), have tended to focus on the level of economic development of the countries were the target companies were located.

(1993), Pettway *et al.* (1993), and Dewenter (1995a and 1995b) also controlled for method of payment, and returns to both bidders and targets are generally found to be higher in cash than in share exchange transactions. This is consistent with what has been found in domestic studies, e.g., Asquith (1993). However, Doukas and Travlos (1988), Morck and Yeung (1992), and Lin *et al.* (1994) did not find method of payment to have a significant impact on abnormal returns to US cross-border bidders.

Target company shareholders were also found by Harris and Ravenscraft (1991), Cebenoyan *et al.* (1992), Feils (1993), Song (1993), Swenson (1993), and marginally by Dewenter (1995a and 1995b) to have gained more when the bid was competitive, while bidders performed worse in competitive bids (Cakici *et al.* (1996)).

Shaked *et al.* (1991), Harris and Ravenscraft (1991), Cebenoyan *et al.* (1992), Markides and Ittner (1994), and Dewenter (1995a), controlled for industry sectors, and found this variable to be of some importance. It should be noted, however, that industry sectors are difficult to define, particularly for highly diversified companies.

A further variable included in some papers, was the relative size of the bidding and target companies. Both Feils (1993) and Markides and Ittner (1994) found bidders to perform better when acquiring large targets (relative to their own size), although Cakici *et al.* (1996) did not find this variable to be of importance. Pettway *et al.* (1993) found small targets to receive a higher premium than large targets.

Moving on to the more controversial variables, Servaes and Zenner (1990), Cakici *et al.* (1991), Harris and Ravenscraft (1991), Swenson (1993), Kang (1993), Mathur *et al.* (1994), Markides and Ittner (1994) and Doukas (1995b) all controlled for the strength of the currency. The general finding was that returns to bidders is influenced by the strength of the dollar (bidders gain more when their currency is strong). However, Cebenoyan *et al.* (1992), Feils (1993), and Cakici *et al.* (1996), who also analysed this variable, did *not* find that the strength of the currency added anything of significance to their analysis.

Another controversial issue, was the impact caused by changes in the US tax laws

during the 1980s. Servaes and Zenner (1990), Manzon *et al.* (1994), Dewenter (1995a), and Doukas (1995b) found some support for this variable. However, Harris and Ravenscraft (1991) and Markides and Ittner (1994) did not find tax variables to be of significance. Cakici *et al.* (1996) did find the tax variable to be significant, but to have the opposite sign to what was expected.

Finally, Fatemi and Furtado (1988), Doukas and Travlos (1988), and Doukas (1995a) argued that US bidders performed better when they entered new markets. This, however, was contradicted by Lin *et al.* (1994), who did not find this variable to be of significance. Somewhat related, Markides and Ittner (1994) found US bidders to perform better if they already had international experience. Looking at cross-border acquisitions *into* the US, Cakici *et al.* (1996) found abnormal returns not to be related to overseas exposure, while Song (1993) argued that foreign bidders performed *better* if they already had operations in the US.

4.5. Limitations of existing research and originality of this thesis

The focus of this thesis (as explained in the Introduction) is on domestic and cross-border acquisitions into the UK during the 1986-1991 period. During this time period the UK witnessed a major takeover boom, with particularly high levels of cross-border acquisitions. Indeed, in 1990, the value of cross-border acquisitions into the UK exceeded the value of domestic UK acquisitions. This thesis contains an analysis of the shareholder wealth effects (for both target and bidding company shareholders) of both domestic and cross-border acquisitions, as well as an analysis of the differences in the levels of abnormal returns associated with domestic and cross-border transactions (known as cross-border effects).

As was indicated in the above literature review, there appears to be only two previous studies which have looked specifically at cross-border acquisitions into the UK. Both Conn and Connell (1990) and Feils (1993) established that US bidders, on average, lost as a result of their cross-border acquisitions into the UK. However,

neither study included an analysis of acquisitions into the UK by companies based outside the US. In addition, neither study made any comparison to bidding companies engaged in domestic acquisitions, as is done in this study.

Conn and Connell (1990) and Feils (1993) found that UK targets gained significantly from cross-border acquisitions, although possibly not very much (at least in comparison to US targets). Neither study compared target company abnormal returns in cross-border acquisitions to that observed in domestic UK takeovers. This study aims to fill that gap.

It should also be noted that Conn and Connell (1990) based their analysis on the 1971-1980 period. Thus, Feils (1993) appears to be the only previous study having looked at takeover into the UK during the cross-border takeover boom of the late 1980s. Feils, however, analysed abnormal returns over a short time frame (11 days). As indicated previously (and discussed further in the results chapters in this thesis), such an event window may not be sufficient for capturing all (or even the main part) of the wealth effects associated with cross-border acquisitions.

Harris and Ravenscraft (1992) argued that "together the bidder and target shareholder return studies indicate that foreign acquisitions appear to create more value than purely domestic acquisitions. However, additional evidence is needed including analyses containing share price data on both firms involved in each takeover". (p. 177). This study provides such evidence, by analysing the level of abnormal returns to bidding company shareholders (in cross-border and domestic acquisitions), as well as the joint abnormal returns to target and bidding company shareholders..

CHAPTER 5

RESEARCH QUESTIONS AND HYPOTHESES

5.1. Summary

This chapter contains a discussion of the 21 hypotheses tested in the empirical section of this thesis. These hypotheses relate to the level of abnormal returns to target and bidding company shareholders in cross-border and domestic acquisitions, as well as to the *differences* in the levels of abnormal returns in cross-border and domestic acquisitions (cross-border effects). Hypotheses relating to the cross-sectional analysis are also discussed. The variables analysed are bid outcome, the existence of competition in the bid, revision of bid terms, method of payment, pre-bid stake by bidding company in target, relative size of targets and bidding companies and the size of the company analysed.

5.2. Introduction

As stated in the introduction to this thesis, the overall objective of this research is to ascertain the extent to which shareholders of bidding and target companies gained or lost from domestic and cross-border acquisitions into the UK during the 1986-1991 period, and to establish the degree to which abnormal returns differed between domestic and cross-border acquisitions. In addition, various bid characteristics are analysed, in an attempt to explain some of the cross-sectional variation in abnormal returns. This chapter contains an explanation of the hypotheses tested in this study.

5.3. Hypotheses

5.3.1. Target Company Shareholders

As evident from the literature review, target company shareholders in both domestic and cross-border acquisitions have generally been found to gain significantly over the period surrounding a takeover bid. It is therefore expected that shareholders

of UK listed companies bid for by both domestic and foreign predators will have gained significantly as a result of bid announcements in the UK during the 1986-1991 period.

Hypothesis 1 - Cross-Border Target Companies

H_0CT No abnormal returns accrued to shareholders of target companies in cross-border acquisitions into the UK.

H_1CT Significant abnormal returns (positive or negative) accrued to shareholders of target companies in cross-border acquisitions into the UK.

Hypothesis 2 - Domestic Target Companies

H_0DT No abnormal returns accrued to shareholders of target companies in domestic UK acquisitions.

H_1DT Significant abnormal returns (positive or negative) accrued to shareholders of target companies in domestic UK acquisitions.

In the literature on cross-border acquisitions, most studies (predominately relating to the US market) have indicated that target company shareholders obtain higher abnormal returns in acquisitions where the bidder was based abroad than in acquisitions where the bidder was incorporated in the same country as the target. As discussed in the literature review, no previous research appears to have tested whether a similar positive target company 'cross-border effect' has been present in the UK.

Hypothesis 3 - Target Companies 'Cross-Border Effect'

H_0CT effect There were no differences in the level of abnormal returns to UK target company shareholders in domestic and cross-border acquisitions.

H_1CT effect There were significant differences in the level of abnormal returns to UK target company shareholders in domestic and cross-border acquisitions.

In addition to the distinction between domestic and cross-border acquisitions, the

nationality of the overseas bidder may also have an impact on returns to target company shareholders. As discussed in the literature, Fatemi and Furtado (1988), Conn and Connell (1990), Cakici *et al.* (1991 and 1996), Harris and Ravenscraft (1991), Sudia (1992), Feils (1993), Eun *et al.* (1995), and Cheng and Chan (1995), all studied the variations in abnormal returns associated with cross-border bidders from various countries.

As discussed in Chapter 2, one of the main arguments put forward for cross-border acquisitions, is market access. If so, one could hypothesise that bidding companies based outside the EC were prepared to pay an additional premium in order to gain access to the Community. Thus, it is hypothesised that UK target companies gained superior abnormal returns in cross-border acquisitions from companies based outside the EC compared to acquisitions from companies based in other EC member countries.

Hypothesis 4 - Cross-Border Target Companies - Nationality of Bidders

H_0CT nat No differences in abnormal returns to shareholders of UK target companies in cross-border acquisitions were associated with the nationality of the overseas bidders.

H_1CT nat Significant differences in abnormal returns to shareholders of UK target companies in cross-border acquisitions were associated with the nationality of the overseas bidders.

Previous research on domestic acquisitions has indicated that the share price of target companies tends to rise several months prior to the official bid announcement (e.g., Franks *et al.* (1977)). Possible explanations for such pre-bid share price performance include takeover rumours, insider trading and stake building by the bidding company. The extent to which the timing of the rise in target companies share prices differs between domestic and cross-border acquisitions appears not to have been considered in the existing literature.

It may be hypothesised that cross-border acquisitions will be more difficult for the

UK market to predict, thus proving more of a surprise than domestic acquisitions. On the other hand, cross-border acquisitions may be more complex to execute than national bids, thus requiring longer time for preparation. If so, there may be a greater risk of information leaking to the market. It is uncertain which (if either) of these effects is the most important.

Hypothesis 5 - Timing of Target Company Bid Rumour

H_0T timing There were no differences between domestic and cross-border acquisitions with regard to the length of time prior to the bid announcement at which target company share price rise.

H_1T timing The length of time prior to the bid announcement at which target company share price rose differed between domestic and cross-border acquisitions.

Overseas bidding companies may have more difficulty imposing strict managerial control over any new subsidiary than will domestic firms, due to distance from their head office (Davies (1995), p. 42). As a result, one might expect to observe overseas bidders to pursue acquisitions of UK companies which have performed relatively well over the period prior to the bid[100]. On the other hand, if there is a general hostility towards foreign bidders, cross-border bidders may expect to face less opposition with acquisitions of poorly performing target companies.

Hypothesis 6 - Pre-Bid Performance of Targets

H_0T pre-bid There were no differences in pre-bid performance between target companies in domestic and cross-border acquisitions.

H_1T pre-bid There were significant differences (positive or negative) in the pre-bid performance of target companies in domestic and cross-border acquisitions.

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100 In this study, the pre-bid performance has been measured in terms of abnormal returns, cumulated from eight months prior to the month of the bid announcement.

5.3.2. Bidding Company Shareholders

As indicated in the literature review, controversy still surrounds the issue of whether or not bidding company shareholders gain or lose from takeover activity. In a perfectly competitive market for corporate control, all gains from a business combination should accrue to target company shareholders. A high bid premium should reflect expected synergies from the merger, rather than being a result of overpayment. As a consequence, one would expect neither domestic nor overseas bidders to encounter abnormal returns, regardless of any differences in average bid premium offered by domestic and foreign bidders.

Other theories have, however, been suggested. According to Roll's Hubris Hypothesis (Roll, 1986), successful bidders will tend to have overpaid. If so, one would expect bidding companies to earn negative abnormal returns, particularly during the period following the bid announcement.

With regard to cross-border acquisitions, Conn and Connell (1990) argued that the UK market for corporate control was relatively inefficient compared to that of the US[101]. Although such an argument is questionable (as discussed in Chapter 4), if level of efficiency in takeover markets is of importance, abnormal returns to bidders could well be different in domestic and cross-border acquisitions, as well as for bidders based in different countries. Conn and Connell argued that "...returns to foreign bidders should be relatively high if the market for corporate control is relatively inefficient in the UK and international capital markets are integrated". (p. 691).

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101 Conn and Connell (1990) argued that security regulation in the US "...facilitate the flow of information regarding mergers and hence encourage competitive bids". (p. 691). In addition, they argued that "...agency costs appear to be significantly higher in UK firms due to the structure and remuneration arrangements of boards of directors" (p. 691), with fewer non-executive directors and less reliance on share options than in the US.

Hypothesis 7 - Cross-Border Bidding Companies

H_0CB No abnormal returns accrued to shareholders of overseas bidding companies in cross-border acquisitions into the UK.

H_1CB Significant abnormal returns (positive or negative) accrued to shareholders of overseas bidding companies in cross-border acquisitions into the UK.

Hypothesis 8 - Nationality of Cross-Border Bidding Companies

H_0CB nat No differences in abnormal returns to overseas bidding companies in cross-border acquisitions into the UK were associated with the nationality of the bidder.

H_1CB nat Significant differences in abnormal returns to overseas bidding companies in cross-border acquisitions into the UK were associated with the nationality of the bidder.

Hypothesis 9 - Domestic Bidding Companies

H_0DB No abnormal returns accrued to shareholders of bidding companies in domestic UK acquisitions.

H_1DB Significant abnormal returns (positive or negative) accrued to shareholders of bidding companies in domestic UK acquisitions.

Hypothesis 10 - Bidding Companies 'Cross-Border Effect'

H_0CB effect No differences in abnormal returns to overseas and UK bidding companies in cross-border and domestic acquisitions were present.

H_1CB effect Abnormal returns to overseas bidding companies in cross-border acquisitions and UK bidding companies in domestic acquisitions were significantly different.

5.3.3. Joint Abnormal Returns

With regard to takeovers in the UK, Limmack (1991) presented evidence that

acquisitions created value, but that the gain to target company shareholders exceeded the total joint saving. Firth (1980), however, argued that acquisitions were overall reducing shareholder wealth.

Previous research has indicated that target companies gain more from cross-border than from domestic acquisitions. In addition, as discussed in the literature review, there are some suggestions that US acquirors perform better than UK bidders. As US predators constituted a large proportion of the cross-border acquisitions into the UK (as discussed in Chapter 6), it may be hypothesised that the joint abnormal returns to pairs of target and bidding company shareholders was higher in cross-border than in domestic UK acquisitions.

Hypothesis 11 - Cross-Border Acquisitions

H_0C No joint abnormal returns accrued to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK.

H_1C Significant joint abnormal returns (positive or negative) accrued to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK.

Hypothesis 12 - Nationality of Bidder in Cross-Border Acquisitions

H_0C_{nat} No differences in joint abnormal returns to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK were associated with the nationality of the overseas bidder.

H_1C_{nat} Significant differences in joint abnormal returns to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK were associated with the nationality of the overseas bidder.

Hypothesis 13 - Domestic Acquisitions

H_0D No joint abnormal returns accrued to shareholders of bidding and target companies in domestic acquisitions into the UK.

H_1D Significant joint abnormal returns (positive or negative) accrued to shareholders of bidding and target companies in domestic acquisitions into the UK.

Hypothesis 14 - Total Joint 'Cross-Border Effect'

H_0C effect No differences in joint abnormal returns to pairs of target and bidding companies were observed between domestic and cross-border acquisitions.

H_1C effect Abnormal returns to pairs of target and bidding companies were significantly different in domestic and cross-border acquisitions.

5.3.4. Cross-Sectional Analysis of Abnormal Returns

As evident from the literature review in Chapters 3 and 4, several studies have suggested the level of abnormal returns to target and/or bidding company shareholders is dependent not only on the nationality of the bidding company, but also on the characteristics of the bid itself. The specific bid characteristics analysed in this study are: whether or not the bid was successful; whether or not the bid was competitive; whether or not the terms of the offer were revised; the method of payment offered; whether or not a stake was held in the target by the bidder prior to launching the offer; the relative size of the targets and bidders; as well as the size (the market value of the target, the bidder or the joint market values) of the companies in question. These variables are discussed further below[102].

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102 As evident from the literature review, a number of other explanatory variables have been included in cross-sectional analyses. Of particular relevance to cross-border acquisitions, may be level of previous international experience, and the effect of exchange rate changes. Doukas and Travlos (1988) and Fatemi and Furtado (1988) argued that bidding companies performed better from acquisitions into new markets. An interesting aspect to study would also have been the importance of previous international *acquisition* experience. However, the data which would have been required for such an analysis was not readily available. While Servaes and Zenner (1990), Cakici *et al.* (1991), Harris and Ravenscraft (1991), Swenson (1993), Kang (1993), Mathur *et al.* (1994), Markides and Ittner (1994), and Doukas (1995a) all found the

a) Bid Outcome

Several papers analysed in the literature review (such as Franks *et al.* (1977), Fatemi and Furtado (1988), Mathur *et al.* (1989), Lin *et al.* (1994) and Cakici *et al.* (1996) have restricted their analysis to completed acquisitions, and have thus not analysed the impact of bid outcome.

Limmack (1991) found that bidding companies performed significantly worse in failed takeovers than in successful ones. Similar observations have been made in other studies, such as Asquith (1983). In their review article of mergers and acquisitions in the US, Jensen and Ruback (1983) also found bidding companies generally to have performed better in successful than in failed offers. In a study of US bidding companies, De *et al.* (1996) found bid outcome not to have had a significant impact on the level of abnormal returns in single bidder offers, but to have been of importance in competitive bids.

> "While bidders in multiple-bid contests experience negative returns during the announcement period of a successful bid, we find that they earn positive returns if the bid is unsuccessful... In single-bid contests, however, both successful and unsuccessful bidders earn similar statistically insignificant positive returns. Taken together, our results underscore that success in competitive acquisitions is costly to shareholders of the acquiring firms". (p. 262).

Competitive bids are discussed further below.

With regard to target company shareholders, Jensen and Ruback (1983) found abnormal returns to targets in failed acquisitions to have been at least as high as that of successful acquisitions during the bid period, although target company shareholders experienced negative abnormal returns on the announcement of the unsuccessful bid

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strength of the currency to be of some importance, Cebenoyan *et al.* (1992), Feils (1993), and Cakici *et al.* (1996) did not find the variable to help explain cross-sectional variations in abnormal returns. As discussed in section 2.4.3, any classification based on the strength of the currency is fraught with difficulty. Consequently, an analysis of the exchange rate has not been included in the cross-sectional analysis in this study.

outcome.

In this study, the effect of bid outcome on the level of abnormal returns to target and bidding company shareholders in cross-border and domestic acquisitions, as well as on the level of any 'cross-border effect' is analysed.

Hypothesis 15 - Bid Outcome

$H_{0\ outcome}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) in successful and failed acquisitions.

$H_{1\ outcome}$ Abnormal returns were significantly different to companies (target, bidding and joint) in successful and failed acquisitions.

b) Competition in Bid

Studies such as Bradley *et al.* (1988), Jarrell and Poulsen (1989), Fowler and Smidt (1989), Kaplan and Weisbach (1992) and De *et al.* (1996), have found competitive bids to have had a negative impact on the level of abnormal returns to bidding company shareholders. However, Franks *et al.* (1989) argued that US "...bidders pay more for targets that are contested (multiple bidders) ... but that bidders do not experience significant negative announcement returns as a consequence". (p. 92). Similar results were obtained for the UK by Franks and Harris (1989) and Limmack (1993).

Studies such as Michel and Shaked (1986), Stulz *et al.* (1990), and Kaplan and Weisbach (1992) for domestic acquisitions, and Song (1993) and Swenson (1993) for cross-border acquisitions, found US targets to have gained substantially more in competitive than in single bidder takeovers contests. Dewenter (1995a and 1995b) found target company shareholders to have gained marginally more in competitive bids, although not significantly so. In addition, Dewenter (1995a) also argued that "foreign investors appear to pay ... less [than domestic bidders] with competitive bidders". (p. 439).

Hypothesis 16 - Competition in Bid

$H_{0\ competitive}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) in single bidder and multiple bidder (competitive) acquisitions.

$H_{1\ competitive}$ Abnormal returns were significantly different to companies (target, bidding and joint) in single bidder and multiple bidder (competitive) acquisitions.

c) Revision of Bid Terms

De *et al.* (1996) analysed the impact of bid revision on the abnormal returns to US bidding companies, and found revision of bid terms, even in single bidder offers, to have had a negative impact on the performance of the bidders. They argued that "such revision of bids may stem from potential competition. If so, our results imply that both potential competition and actual competition have a negative impact on bidder returns". (p. 262).

Limmack (1993) also found bidding company shareholders to have lost in bids where the offer had to be increased due to resistance from target company shareholders (although the level of cumulative abnormal returns were not significantly different from those observed in uncontested offers). Limmack, however, also found bid revision to have had little impact on the abnormal returns to target company shareholders. De *et al.* noted that the mean CAR (from the month of the bid announcement to the month of the bid outcome) in revised bids of +39.17% was only 0.89 percentage points higher than in uncontested bids, and was 26.05 percentage points lower than in competitive bids. Thus, while De *at al.* (1996) argued that competitive and revised bids had similar negative impact on bidding companies abnormal returns, the two categories of bids appear to have had widely different impact on the fortunes of target company shareholders.

Hypothesis 17 - Revision of Bid Terms

H_0 revision There were no differences in the level of abnormal returns to companies (target, bidding and joint) in revised and unrevised offers.

H_1 revision Abnormal returns were significantly different to companies (target, bidding and joint) in revised and unrevised offers.

d) Method of Payment

Myers and Majluf (1984) argued that bidders tend to offer equity when managers consider the shares of their company to be overvalued, and cash when the shares are believed to be undervalued. As argued by Amihud *et al.*, however, "...investors expect this and will, therefore, drive down the value of firms that issue new equity. Cash (debt) financing of acquisitions will, therefore, be preferred unless its cost to insiders is excessive". (Amihud *et al.* (1990), p. 606).

A similar argument to that of Myers and Majluf (1984) was put forward by Hansen (1987), who developed a model to explain why a bidder may chose to offer cash (rather than offer an exchange of shares). His model was based on bargaining under asymmetric information.

> "When a target firm knows its value better than a potential acquirer, the acquirer will prefer to offer stock, which has desirable contingent-pricing characteristics, rather than cash". (Hansen (1987), p. 75).

Hansen further argued that,

> "allowing the acquiring company to have proprietary information on its own value sets up a double lemons problem... Recognizing the adverse selection, the target must reduce further its estimate of the value of the acquirer's stock. ...An equilibrium can develop whereby the acquirer offers stock under some conditions (when it is "overvalued") and offer cash under other conditions (when it is "undervalued")". (pp. 76-77).

Following Hanson's theory, one would expect the market to interpret cash offers as signals of the bidding companies' shares being undervalued, and share offers as signals of the share prices being too high. "...equity as a means of payment will convey bad news about the bidder...". (Bhagat and Hirshleifer (1993), p. 1). If so, there is a possibility of any change in the share price of the bidding company at the bid announcement not being solely due to information regarding the acquisition, but also reflect a general adjustment of expectations regarding future prospects of the bidder. The different causes of any share price reaction at the time of a bid announcement is, however, difficult to separate. Following the theory, one would expect bidding companies' shares to react more favourably to cash than to share financed acquisitions.

Fishman (1989) developed a theoretical model arguing that cash bids are likely to be associated with larger gains to targets than share offers. His theory, also based on asymmetric information, argues that the bidder can use cash bids "...to preempt potential competition by signalling a high valuation" for the target. (p. 42). The argument put forward was that acquisitions offering a high premium for the target will tend to be cash offers, while low value acquisitions will tend to be share offers.

The theoretical models thus predicts that both target and bidding company shareholders will perform better in cash than in other types of offers. The existing empirical evidence generally supports the predictions of these theories.

Several studies, such as e.g., Travlos (1987), Franks *et al.* (1988), Franks and Harris (1989), and Kaplan and Weisbach (1992) have found that US bidding companies on average perform significantly better in cash than in equity financed takeovers. However, Franks *et al.* (1991) found that, for US bidders, "although the difference between the performance of all-cash and all-equity bidders is large, it is ... not statistically significant". (p. 92). Similar results were obtained by Agrawal *et al.* (1992). Peterson and Peterson (1991) found *all* US bidders to lose, regardless of the method of payment.

With regard to UK bidders, Franks *et al.* (1988) found that, over the bid period, there was little difference in the level of abnormal returns to bidders in cash and equity financed acquisitions. However, over the two year period following the acquisition, bidders having offered equity performed significantly worse than bidders who offered cash. In another analysis of UK acquisitions, Limmack and McGregor (1992) argued that, regardless of the period of analysis, abnormal returns to bidders in cash acquisitions were approximately zero, while equity (or mixed) financed acquisitions resulted in significant abnormal losses.

With regard to acquisitions in Japan, Pettway *et al.* (1993) found bidders to perform better as a result of cash financed rather than equity financed acquisitions. However, looking at acquisitions in France, Eckbo and Langohr (1989) argued that "bidder firm abnormal returns are on average indistinguishable from zero in both all-cash and all-stock offers". (p. 397).

There is thus some disagreement as to whether bidders perform better in cash than in equity offers. However, several studies have suggested such a relationship. It is also interesting to note that no study has indicated a superior performance to bidders following equity financed offers. One can thus expect any abnormal gain to bidders to be *at least* as high in cash financed as in equity financed offers.

With regard to the target company shareholders, Halpern (1973), Peterson and Peterson (1991) and Kaplan and Weisbach (1992) all found takeover premiums for US targets to be higher in cash than in share exchange transactions. Franks *et al.* (1988) established that both US and UK targets gained significantly more in cash offers than in bids offering an exchange of shares. Similar results were obtained by Eckbo and Langohr (1989) for French acquisitions. In studies of cross-border acquisitions, studies such as Wansley *et al.* (1983), Biswas (1990) and Harris and Ravenscraft (1991), found target company shareholders to receive substantially higher premiums in cash than in equity offers. Consequently, from the available empirical evidence it appears to be clear that target company shareholders, on average, gain more from cash than

from share exchange offers.

When analysing the effect of method of payment for cross-border (and domestic) acquisitions into the UK, two factors should be borne in mind. Firstly, it is important to remember the requirement of the Takeover Code (The Panel on Takeovers and Mergers (1990)) for bidders with a pre-bid stake in excess of 29.9% to offer a full cash alternative. Cash offers are thus fairly common in the UK. Secondly, with particular reference to cross-border acquisitions, the vast majority of cross-border acquisitions tend to be cash financed. This may be associated with investors' reluctance to accept payment in securities of companies not listed in the shareholder's home market. Consequently, statistical testing of the impact of method of payment becomes difficult for cross-border acquisitions, as the sample of transactions where cash is not offered tends to be small (e.g., Dewenter (1995a)).

Hypothesis 18 - Method of Payment

$H_{0\ pay}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) depending on whether or not the offer includes a full cash alternative

$H_{1\ pay}$ Abnormal returns were significantly different to companies (target, bidding and joint) depending on whether the offer includes a full cash alternative.

e) Pre-Bid Stake by Bidder in Target

Walkling and Edminster (1985) argued that pre-bid stakes by bidders in targets was an important variable which ought to be analysed. "The percentage of target shares controlled by the bidder prior to the offer provides a direct measure of bargaining strength". (p. 30). They argued that target company shareholders would have lower abnormal returns where the bidder controlled a large fraction of the target company shares prior to the takeover. Elaborating on the issue, they argued that,

"at least four factors suggest a negative correlation between shares controlled and bid premiums.

(1) Increased ownership provides a direct influence on the actions of the target management.

(2) Share ownership may provide the bidder with access to important target firm information...

(3) Bidders facing an upward supply curve for shares of the target firm would pay premiums directly related to the percentage of shares sought. Increased ownership in the target firm would reduce the amount of shares needed to obtain any desired level of control.

(4) Bidders with a previous commitment in the form of share ownership may be perceived as being more serious in their acquisition attempts. As a consequence, arbitrageurs are more likely to purchase shares in the open market, which may increase the pool of obtainable shares" (Walkling and Edminster (1985) p. 35) .

Consequently, one would expect lower abnormal returns to target and higher abnormal returns to bidding companies' shareholders where the predator held a stake in the target prior to bid announcement. However, contrary to Walkling and Edminster's expectations, Franks and Harris (1989), found UK targets to gain *more* when the bidding company held a large (over 30%) pre-bid stake in the target. Thus, the limited available empirical evidence seems to contradict the expectation as presented by Walkling and Edminster.

Hypothesis 19 - Pre-Bid Stake

$H_{0\ stake}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) depending on whether or not the bidder held a pre-bid stake in the target.

$H_{1\ stake}$ Abnormal returns were significantly different to companies (target, bidding and joint) depending on whether or not the bidder held a pre-bid stake in the target.

f) Relative Size of Target and Bidding Companies

Singh (1971 and 1975) and Meeks (1977) established that target companies in UK acquisitions tended to be substantially smaller than the bidding firms. The same proved to be true in this study. However, as reported in Table 6.5 in the following chapter, there were great variations in the size of both bidders and targets.

It may be argued that acquisitions of large target companies are likely to have greater impact on the fortunes of acquiring companies than are small takeovers. Asquith *et al.* (1983), Jarrell and Poulsen (1989), Peterson and Peterson (1991) and Feils (1993), found a positive relationship between bidding company cumulative abnormal returns and the size of the target relative to the size of the bidder. Similarly, Markides and Ittner (1994) found the relative size (as measured by sales rather than market values) of the bidder and target to be highly significant.

However, not all previous studies have provided such conclusive results. While Franks and Harris (1989) found abnormal returns to bidders to be "...somewhat higher when the target is relatively large, the differences are not statistically significant". (p. 236). In their analysis of US bidders, Loderer and Martin (1990) obtained quite confusing results with regard to relative company size. They found that bidders performed better if the relative size of the target to the bidder was large. However, they also found that acquisitions of very large targets resulted in losses to bidders. In addition, "...large firms ... tend to pay too much for their targets...". (p. 26). Loderer and Martin interpreted their results as,

"on balance, these results suggest that corporate acquisitions have positive net present value proportional to acquisition size, but that there are enough large acquisitions with negative net present value to leave a trace of a negative relationship between announcement effects and dollar target size. Moreover, large firms may be less careful in evaluating acquisition prospects". (p. 27).

The last part of their argument may be questionable, and the authors do not offer any logical argument as to *why* large bidders show less care than smaller ones.

Limmack (1993) found bidding companies, on average, to lose significantly in UK acquisitions. However, the negative abnormal returns were smaller in acquisitions of either very large or very small target companies (relative to the market value of the bidder). With regard to large acquisitions, Limmack (1993) argued that "...bidders for targets of similar size appear to arrive at more accurate valuation of the benefits from the acquisition...". (p. 32), thus contradicting the argument of Loderer and Martin regarding large bidders, as discussed above. With regard to the small negative abnormal returns to bidding companies in small acquisitions, Limmack argued that a possible explanation may be that even potentially large (percentage) overpayments for such small targets may have had only a small impact on the large market values of the bidders.

Franks *et al.* (1991) found "...no significant link between relative size and either target or bidder gains". (p. 93). Similarly, Fowler and Schmidt (1989) found no significant relationship between relative size of bidders and targets (as measured by total assets) and bidder returns.

As evident from the existing literature, while several studies have indicated a positive relationship between relative size and level of abnormal returns to bidding company shareholders, not all empirical evidence support such a finding.

With regard to abnormal returns to target company shareholders, Franks *et al.* (1991) found relative size not to be of importance. Pettway *et al.* (1993), on the other

hand, found that "... gains to U.S. sellers are less positive when the buyer is large relative to the seller...". (p. 92). Franks and Harris (1989) too found target company shareholders, in this case in the UK, to have gained more when their company was small relative to the size of the bidder. Similar results were obtained by Limmack (1993), who argued that "...the premium paid to the targets increases with the relative size of bidder to target". (p. 31). Peterson and Peterson (1991) argued that for the US, "...smaller target firms receive greater absolute returns, but share less in the total wealth changes to the combination". (p. 401). The existing empirical evidence of higher percentage abnormal returns to small target firms, may "...suggest that bidders are over-generous in the terms offered to relatively small targets...". (Limmack (1993), pp. 31-32).

Hypothesis 20 - Relative Size of Targets and Bidders

$H_{0\ rel\ size}$ The level of abnormal returns to companies (target, bidding and joint) were unaffected by the relative size of the target and bidding companies.

$H_{1\ rel\ size}$ The level of abnormal returns to companies (target, bidding and joint) varied significantly depending on the relative size of the target and bidding companies.

g) Size of the Company

As discussed in more detail in section 6.4.2., several previous studies have suggested that share returns differ between companies with large and small market capitalisations, with small companies historically having outperformed larger ones. This is commonly known as the 'size effect'.

The size effect, if present, may have important implications for takeover activity. As argued by Banz (1981), "...large firms are able to pay a premium for the stock of small firms since they will be able to discount the same cash flows at a smaller discount rate". (p. 17). It can thus be hypothesised that the percentage abnormal

returns to target company shareholders will be higher the lower the pre-bid market value of the target company.

In order to test whether or not the level of abnormal returns to shareholders is dependent upon the market capitalisation of the company, a size variable was included in the cross-sectional analysis.

Hypothesis 21 - Size of Company

$H_{0\ size}$ The level of abnormal returns to companies (target, bidding and joint) were unaffected by their size (as measured by pre-bid market value)

$H_{1\ size}$ The level of abnormal returns to companies varied significantly depending on their size (as measured by pre-bid market value).

5.4. Conclusion

This chapter contains a discussion of the hypotheses tested in this study. Previous research (as discussed in Chapters 3 and 4) has indicated that target company shareholders gain from both domestic and cross-border acquisitions, but that the gains are generally higher in cross-border than in domestic transactions. This thesis sets out to test whether shareholders of UK target companies in cross-border and domestic acquisitions between 1986 and 1991 gained from such acquisitions and to test whether a target company cross-border effect was present in the UK during this time period. Hypotheses also relate to the timing of the abnormal returns to target company shareholders, as well as to the impact of the nationality of the bidding firm. Similarly, hypotheses relate to the level of abnormal returns to overseas and domestic bidding companies, and the differences between the two (bidding company cross-border effect), as well as to the level of joint abnormal returns to pairs of target and bidding company shareholders.

Previous research has indicated that the characteristics of the bid may have an important impact on the level of abnormal returns. Consequently, the empirical

analysis in this thesis include a cross-sectional analysis to control for variables such as whether the bid was successful or failed (outcome), whether or not more than one company bid for the target (competitive), whether or not the terms of the offer were raised (revised), whether or not a full cash alternative was offered (pay), whether or not the bidding company held shares in the target company prior to the bid announcement (stake), the relative size of the target and bidding companies (relative size) and the size of the company being analysed (size). Hypotheses relating to these variables are discussed in the chapter. The working (null) hypotheses of this study are:

Hypothesis 1 - Cross-Border Target Companies

H_0CT No abnormal returns accrued to shareholders of target companies in cross-border acquisitions into the UK.

Hypothesis 2 - Domestic Target Companies

H_0DT No abnormal returns accrued to shareholders of target companies in domestic UK acquisitions.

Hypothesis 3 - Target Companies 'Cross-Border Effect'

$H_0CT\ effect$ There were no differences in the level of abnormal returns to UK target company shareholders in domestic and cross-border acquisitions.

Hypothesis 4 - Cross-Border Target Companies - Nationality of Bidders

$H_0CT\ nat$ No differences in abnormal returns to shareholders of UK target companies in cross-border acquisitions were associated with the nationality of the overseas bidders.

Hypothesis 5 - Timing of Target Company Bid Rumour

$H_0T\ timing$ There were no differences between domestic and cross-border acquisitions with regard to the length of time prior to the bid announcement at which target company share price rise.

Hypothesis 6 - Pre-Bid Performance of Targets

$H_0T\ pre\text{-}bid$ There were no differences in pre-bid performance between target companies in domestic and cross-border acquisitions.

Hypothesis 7 - Cross-Border Bidding Companies

H_0CB No abnormal returns accrued to shareholders of overseas bidding companies in cross-border acquisitions into the UK.

Hypothesis 8 - Nationality of Cross-Border Bidding Companies

$H_0CB\ nat$ No differences in abnormal returns to overseas bidding companies in cross-border acquisitions into the UK were associated with the nationality of the bidder.

Hypothesis 9 - Domestic Bidding Companies

H_0DB No abnormal returns accrued to shareholders of bidding companies in domestic UK acquisitions.

Hypothesis 10 - Bidding Companies 'Cross-Border Effect'

H_0CB effect No differences in abnormal returns to overseas and UK bidding companies in cross-border and domestic acquisitions were present.

Hypothesis 11 - Cross-Border Acquisitions

H_0C No joint abnormal returns accrued to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK.

Hypothesis 12 - Nationality of Bidder in Cross-Border Acquisitions

H_0C nat No differences in joint abnormal returns to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK were associated with the nationality of the overseas bidder.

Hypothesis 13 - Domestic Acquisitions

H_0D No joint abnormal returns accrued to shareholders of bidding and target companies in domestic acquisitions into the UK.

Hypothesis 14 - Total Joint 'Cross-Border Effect'

H_0C effect No differences in joint abnormal returns to pairs of target and bidding companies were observed between domestic and cross-border acquisitions.

Hypothesis 15 - Bid Outcome

H_0 outcome There were no differences in the level of abnormal returns to companies (target, bidding and joint) in successful and failed acquisitions.

Hypothesis 16 - Competition in Bid

H_0 competitive There were no differences in the level of abnormal returns to companies (target, bidding and joint) in single bidder and multiple bidder (competitive) acquisitions.

Hypothesis 17 - Revision of Bid Terms

H_0 revision There were no differences in the level of abnormal returns to companies (target, bidding and joint) revised and unrevised offers.

Hypothesis 18 - Method of Payment

H_0 pay There were no differences in the level of abnormal returns to companies (target, bidding and joint) depending on whether or not the offer includes a full cash alternative.

Hypothesis 19 - Pre-Bid Stake

H_0 stake There were no differences in the level of abnormal returns to companies (target, bidding and joint) depending on whether or not the bidder held a pre-bid stake in the target.

Hypothesis 20 - Relative Size of Targets and Bidders

H_0 rel size The level of abnormal returns to companies (target, bidding and joint) were unaffected by the relative size of the target and bidding companies.

Hypothesis 21 - Size of Company

$H_{0\ size}$ The level of abnormal returns to companies (target, bidding and joint) were unaffected by their size (as measured by pre-bid market value)

CHAPTER 6

DATA SOURCES AND METHODOLOGY

6.1. Summary

In this chapter, the data used and the methodology applied are explained. The study is based on an analysis of domestic and cross-border takeover bids for listed UK companies during the 1986-1991 period. As far as possible, a census rather than sample analysis was attempted, although partial bids, offers for investment trusts or water companies, as well as some second bids were excluded from the analysis. Data availability proved to be a problem. Nevertheless, the analysis (in Chapters 7, 8 and 9) is based on a large sample of 1,196 companies, split into 71 overseas bidding companies from 14 different countries, 414 UK bidders, 143 UK target companies in cross-border acquisitions, and 568 UK target companies in domestic bids. (Data was available for an analysis of joint abnormal returns to target and bidding company shareholders in 50 cross-border and 356 domestic acquisitions).

The analysis is based on event-study methodology, applying three different test models; the capital asset pricing model, the market model, and the index model. Cross-sectional analysis of (index model) abnormal returns is used to control for bid characteristics, such as nationality of bidder (to test for cross-border effects), bid outcome, whether or not the bid was competitive, or revised, the method of payment, the presence of pre-bid stakes, the relative size (pre-bid market values) of the target and bidding companies, as well as the size of the company in question.

In this study, the mean β values with both the capital asset pricing model and the market model were below 1, while (particularly bidding company) market model α values were large and positive. The problems of parameter estimation and 'thin' trading are discussed. Other methodological difficulties encountered in this study, and discussed in this chapter are: stock market size effects, bid programmes and information leakage, size-differences between bidders and targets, and pre-bid stakes.

In addition, significant post-announcement 'drift' was observed for the bidding companies. Possible explanations for such drift include information release, market inefficiency, and model misspecification.

6.2. Introduction

In this study, abnormal returns to shareholders of both target and bidding company shareholders in domestic UK and cross-border acquisitions into the UK during the 1986-1991 period are analysed.

A major complication encountered in any analysis of share returns to foreign companies' shareholders, such as a study of cross-border acquisitions, is the limited share price information (and in particular, return data) available for overseas firms. As indicated in the literature review in Chapter 4, a common approach has been to restrict the analysis to the *US* companies engaged in cross-border acquisitions for which data is relatively easy to obtain. For example, Fatemi and Furtado (1988), Doukas and Travlos (1988), Travlos (1995), Sudia (1992), Morck and Yeung (1992), Manzon *et al.* (1994), Markides and Ittner (1994), Lin *et al.* (1994), Waheed and Mathur (1995), and Datta and Puia (1995) all restricted their analysis to American bidding companies. An analysis of the foreign target firms involved in the cross-border acquisitions were not included in these studies.

Similarly, Wansley *et al.* (1983), Cakici *et al.* (1991), Shaked *et al.* (1991), Harris and Ravenscraft (1991), Cebenoyan *et al.* (1992), Swenson (1993), Marr *et al.* (1993), Dewenter (1995a) and Cheng and Chan (1995) all restricted their analysis to US companies targeted by foreign predators. Again, the foreign companies were excluded from the analysis. Tessema (1985) combined these approaches, and looked at US target and bidding companies engaged in international mergers. Consequently, of the studies of cross-border acquisitions reviewed in Chapter 4, approximately 60% confined their analysis to US companies, while excluding the foreign counterparts to the cross-border transactions.

As explained in Chapter 4, Cheng and Chan (1995, p. 637) justified their exclusion of foreign bidders by arguing that,

> "...focusing on international takeovers of US target firms allows us to examine indirectly the behaviour of international bidding firms".

Similarly, Marr *et al.* (1993, pp. 290-291) argued that

> "...data on foreign firm's wealth effects are not readily available. The empirical evidence from previous studies show that the gains to bidders are negligible [and] ... that target shareholders capture most of the gains from tender offers. Therefore, the wealth effects to target shareholders should be a good measure of the premium from a takeover".

Both of these arguments assumes that abnormal returns to bidding companies in cross-border acquisitions are insignificant, and similar to the abnormal returns found (by others in previous studies) for domestic bidding companies.

Rather than relying on such questionable assumptions, this study includes an analysis of the level of abnormal returns to overseas bidders from a variety of different countries. In addition, a direct comparison is made to domestic acquisitions, allowing for an analysis of target, bidder, and joint 'cross-border effects'. In their analysis of US bidding companies in cross-border acquisitions, Datta and Puia (1995) argued against analysing companies based in several different countries, due to the significant problems involved in data acquisition.

> "Given lack of data, the gains to the shareholders of acquired firms could not be examined in this study. ... Our sample involved acquired firms in 18 different countries - difficulties associated with obtaining stock returns for these firms ... is, to say the least, considerable. The potential wealth effects for target firms are, undoubtedly, an interesting research question (along with "total" wealth effects in cross-border acquisitions) that need to be addressed in future studies. However, from a pragmatic standpoint such studies would definitely have to limit the sample to acquisitions in a few

countries (e.g., UK) where stock returns are more readily available...". (pp. 354-355).

This study clearly shows that, while such a restrictive sample selection procedure certainly would simplify the process of gathering data, the problems of data availability for overseas companies ***can*** successfully be overcome. Through considerable effort (as discussed below), data was gathered for a large number of the overseas bidding companies, based in 14 different countries. This allowed for an explicit *test* of the abnormal returns to overseas bidders, as well as to *test* whether these abnormal returns were similar or different to those encountered by domestic UK bidders. Having data for both targets and bidders also allows for an analysis of the 'total' wealth effects of both cross-border and domestic acquisitions (and for a comparison of the two), as recommended by Datta and Puia (1995).

6.3. Data Sources and Sample Selection

Information was obtained from *Acquisitions Monthly*[103] on the announcement and completion dates of both cross-border and domestic takeover offers for *listed* UK companies. (No analysis of the large number of acquisitions of private British companies has been undertaken in this thesis[104]). While *Acquisitions Monthly* was first published in 1984, it proved impossible to obtain a complete set of this journal for the first two years of its existence[105]. It was therefore necessary to restrict the analysis to takeovers announced on or after the 1st of January 1986. As can be seen from Figure 1.1 in the Introduction to this thesis, takeover activity, and in particular

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103 The following tables in various issues of *Acquisitions Monthly* were applied: "New Bids for UK Public Companies", "Pending Bids for UK Public Companies", and "Completed Bids for UK Public Companies". Bids included in the "New Bids" tables, but not subsequently referred to in the "Completed Bids" tables, have in this study been deemed to have failed.

104 The objective of this thesis is to analyse the impact of takeover announcements on the *share returns* of the target and bidding companies involved. The analysis has therefore been restricted to listed companies.

105 Despite contacting the publishers directly (as well as the National Library and several other major libraries throughout the UK) it proved impossible to obtain copies of a complete set of the journal prior to January 1986.

cross-border takeover activity, was relatively modest during 1984 and 1985. Consequently, it is unlikely that access to information about takeovers during these two years would substantially have altered the findings of this study.

Takeover bids for which the bid outcome[106] was known prior to the end of December 1991 have been included in this study. Consequently, the analysis is based on 6 years of data, covering (as illustrated in Figure 1.1) the major cross-border takeover boom of the late 1980s and early 1990s.

This thesis is restricted to an analysis of takeover bids for *whole* companies; purchases of company divisions or subsidiaries are not included unless the subsidiary had a separate stock market listing.

Acquisitions Monthly classifies the nationality of the bidding companies according to where their ultimate mother-companies are incorporated. Consequently, a takeover bid by, for example, a US corporation (such as e.g., Ford's acquisition of Jaguar) carried out through a UK subsidiary (Ford UK), has been recorded as a cross-border bid by the US firm. In this study the same classification of nationality as that given in *Acquisitions Monthly* has generally been applied[107].

In its tables on takeover bids, *Acquisitions Monthly* records offers for both UK and Republic of Ireland companies. Acquisitions *of* Republic of Ireland companies have been excluded from the analysis, while acquisitions of UK companies *by* Republic of Ireland companies have been treated as cross-border bids. Also excluded are the few transactions where *Acquisitions Monthly* could not determine which company was the predator and which was the target (so called "pure mergers").

For the six year period under investigation, a total of 966 takeover bids for UK listed companies were identified; 208 (21.53%) of which were made by foreign entities,

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106 A takeover is classified as successful if the bidding company after the offer held a majority of the ordinary shares of the target company. A bid is classified as unsuccessful if majority control was not obtained. Consequently, "success" or "failure" in this context does *not* relate to whether shareholders gained or lost from these transactions.

107 For a few overseas bidders, a stock market listing was only available in a country other than that given as the home country of the company. In these few cases, the nationality of the bidder has been re-defined to be where the company has its main stock market listing.

756 (78.26%) by British institutions, and 2 (0.21%) joint cross-border and domestic bids[108]. As far as possible, this study was based on a *census* rather than a sample of the domestic and cross-border acquisitions into the UK during the 1986 to 1991 period. However, as discussed below, the final samples were somewhat smaller than the total number of bids during the period, mainly due to data limitations.

6.3.1. Cross-Border Takeover Bids

Not all of the 208 cross-border takeover bids for listed UK companies were suitable for inclusion in the analysis. Consequently, some restrictions were imposed on the final sample.

Firstly[109], **partial** takeover bids were excluded from the sample. In five instances the foreign bidder obtained exemption from the City Code on Takeovers and Mergers' (The Panel on Takeovers and Mergers (1990)) requirement of full takeover bids[110]. Such takeovers may have a different impact on share prices than do full acquisitions of all outstanding shares. Due to the special nature of partial bids, it was felt necessary to exclude the five partial cross-border acquisitions from the analysis.

Secondly, acquisitions of UK **investment trusts** were excluded[111]. Investment trusts are generally valued on the basis of the market value of their highly liquid assets such as shares and bonds. Indeed, the offer price for such trusts were frequently stated as a certain percentage of net asset value, rather than a fixed offer price (cash or shares in the bidding company) for each of the target company's shares. It is

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108 These two joint cross-border and domestic takeover bids have not been included in the further analysis of cross-border and domestic takeovers. As discussed below, other joint bids have also been excluded from the analysis.

109 Some of the takeover bids may have been rejected on more than one criteria, such as partial bids for investment trusts. In order to avoid double-counting, excluded takeovers have only been recorded once, according to which selection criteria was breached first.

110 The Takeover Code Rule 9.1. requires any person or company acquiring ownership of 30 per cent or more of the voting rights in a company to make a full bid for all the outstanding equity share capital (whether voting or non-voting), unless consent is obtained from the Panel. Partial takeover bids are generally not accepted.

111 In a slightly different study from this (an analysis of the performance of shares recommended by brokers), Dimson and Fraletti (1986) also found it necessary to exclude investment trusts from the analysis.

therefore possible that the 'normal' pattern of bid premiums are not present in acquisitions of investment trusts. Nine cross-border acquisitions were rejected from the sample on this criteria.

The third group of international offers omitted were those for UK **water companies**. There were several reasons for excluding water companies from the analysis. Firstly, as explained by the Department of Trade and Industry (1991), "there are special arrangements for water company mergers under the Water Act 1989. A merger must be referred to the Mergers and Monopolies Commission if the water-related assets of the acquiring company and the acquired company are each more than £30m". (p. 5). Secondly, for several of the water companies the ordinary shares had characteristics similar to preference shares. (The analysis in this study was restricted to the impact of takeover bids on the *ordinary* shares of the companies involved). Consequently, it was decided not to include the thirteen bids for water companies in this study[112]. It is interesting to note, however, that all of these thirteen merger proposals involved French bidders[113].

In two instances did two overseas companies bid jointly for their British target. The analysis in this study is restricted to takeover bids for whole companies by individual companies, and these two **joint bids** were therefore excluded from the sample.

In the existing literature, most studies have excluded companies which made or received more than one takeover bid during the parameter estimation period of the market model or the capital asset pricing model (which in this study extends from 67 to 9 months prior to the month of the bid announcement), or the analysis ('event') period (which in this study extends from 8 months prior to the bid announcement, to 5 months after the bid announcement month (for bidders), as discussed further below).

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112 It was also noticed that several of the water companies received takeover bids soon after being privatised. Consequently, for several of the bids insufficient share price information would therefore have been available for analysis had it been decided to include these acquisitions in the analysis.

113 For a discussion of French companies' interests in the UK water industry, see Boulton (1995).

The argument generally put forward in the literature for excluding frequent bidders (or targets) is that the market model alpha and beta estimates may be affected by the other bids, thus not providing an accurate measure of the 'normal' relationship between share and market returns. If so, abnormal return estimates may be biased.

For two distinct reasons, the procedure of excluding frequent bidders (and companies receiving more than one bid) has not been adopted in this study. Firstly, there is a possibility that bidding companies which attempted a second acquisition were companies which considered their first acquisition to have been financially beneficial, while the ones which did not make a second bid may have been companies who experienced difficulties associated with their first acquisition. As discussed in Chapter 3, Limmack (1990) found experienced UK bidders to have performed better than first-time buyers. On the other hand, in another study of UK acquisitions, Lahey and Conn (1990) argued that "...there is no significant difference in the market's reaction to acquiring firms with one merger as opposed to those with multiple mergers". (p. 436). In his study of mergers and acquisitions in the German market, Bühner (1991) established that "firms that have frequent experience of mergers tend to gain from their mergers" (p. 513), while infrequent bidders tended to experience large *negative* abnormal returns. Loderer and Martin (1990) found US bidders to have performed *better* from their first acquisitions than from subsequent bids. Whether frequent bidders perform better or worse than other bidders thus remains an open question. However, by excluding frequent bidders, there is a danger of introducing a bias into the analysis.

Secondly, there is a practical problem of data availability. Excluding frequent bidders would significantly reduce the data set. In addition, if frequent bidders were to be excluded from the analysis, it would be necessary to gather information on *all* takeover bids (ideally not only of listed UK companies, but also for private firms and overseas companies) made (or received) during the period from 67 months prior to, to 5 months after the month of the bid announcement. It has, unfortunately, not been

possible to obtain this information[114].

Consequently, while it is recognised that intervening events, such as previous and/or subsequent acquisitions may affect the market model and capital asset pricing model parameters, companies engaged in more than one acquisition have not been excluded from the sample in this study. A number of bidders made several takeover bids during the six year period of study, and each of these bids have been treated as separate 'events'[115]. Similarly, competing takeover bids by different companies for the same target firm have been accepted in this study, and treated as separate observations[116]. However, one cross-border acquisition was rejected from the sample as it involved the **second bid** by the same bidder for the same target within a 12 month period. There is a high probability that such a renewed bid was anticipated by the market. If that is the case, there will have been little informational impact of such a follow-up bid. The first takeover attempt has been included (as unsuccessful), while the second bid was omitted from the sample.

On four occasions, information contained in *Acquisitions Monthly* was incomplete. Unfortunately, these takeover bids had to be excluded from the analysis. In total, 34 cross-border takeover bids were rejected from the sample, as detailed in Table 6.1.

Following this screening process, a total of 174 cross-border takeover bids (by 156 different overseas entities) remained for analysis. A major problem encountered, however, related to the limited data available for the overseas bidders. For the foreign bidding companies, share price data (as well as some data on dividend payments) was obtained from Datastream International. (For domestic companies, monthly log returns

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114 The problems of identifying all acquisitions were recognised by Hughes, Mueller and Singh (1980a), who in their sample of *non*merging firms included "...firms that had not engaged in merger activity (other than perhaps a few acquisitions of unlisted firms)...". (p. 51).

115 In their study of acquisitions in the UK and the US, Franks, Harris and Mayer (1988) also included frequent bidders in their analysis, and "in cases where several acquisitions were made by the same bidder, the bidder was counted separately by each acquisition made". (p. 232).

116 The impact of the competitive nature of bids has been analysed in the cross-sectional analysis in Chapters 7, 8, and 9.

Table 6.1

Cross-Border Acquisitions - Analysis of Rejected Takeover Bids

Certain takeover bids were excluded from the analysis (see text for explanations). These included partial takeover bids, bids for UK investment trusts, water companies, joint bids (by two or more bidders), and second bids by the same bidder for the same target within 12 months. Finally, a few bids were excluded from the analysis due to insufficient information in *Acquisitions Monthly* (AM).

	Partial	Invest. Trust	Water	Joint	Second Bid	Incom-plete AM Data	Total
Australia		2					**2**
Belgium				1			**1**
Denmark	1						**1**
Eire						1	**1**
France			13	1			**14**
Luxembourg		2					**2**
Malaysia						1	**1**
Netherlands	1						**1**
Norway		1					**1**
New Zealand	1						**1**
South Africa	1	2					**3**
Saudi Arabia					1		**1**
US	1	2				2	**5**
Total	**5**	**9**	**13**	**2**	**1**	**4**	**34**

were obtained from the London Business School Share Price Database[117]). The Datastream database is international in coverage, and contains, amongst other things, share price information for several thousand companies. However, even in this database, there is a possible bias towards larger companies[118]. This *may* influence the findings of this thesis if company size is an important variable in determining the level of abnormal returns to companies involved in cross-border acquisitions[119].

Several overseas bidding companies appears not to have been listed (or, for some

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117 I am grateful to Strathclyde University for granting access to their computer system containing the LBS data.

118 As will be discussed later, however, data was obtained from Datastream for a few foreign companies with very small market values. There does therefore not appear to be a serious size-bias in the database.

119 The issue of company size is discussed further in section 6.5.2, and is included in the cross-sectional analyses in Chapters 7, 8, and 9.

other reason, were not included in the Datastream database). In addition, for some companies *insufficient* data was available for any analysis[120]. Similarly, for some of the target companies, data availability was a problem. The *Acquisitions Monthly* lists classify OTC (over the counter) companies as listed, and therefore includes takeovers of such companies in the lists from which the samples in this study were drawn. Share price data was, however, generally not available for such companies.

A further difficulty encountered, was a lack of return data. Although Datastream adjusts share prices for capitalisation changes, it does not make adjustments for dividend payments. Share prices, therefore, had to be separately adjusted for dividend payments in order to obtain return data for the overseas bidding companies. While Datastream's coverage of share price information is generally very good, it is surprisingly patchy with regard to dividend payments. To overcome this problem, it was necessary to obtain a large part of dividend data from various Stock Exchanges and companies directly[121].

Ideally, it would have been desirable if data was available for both the target and the bidding companies, so as to enable a calculation of the *total* value creation/loss from cross-border acquisitions. However, imposing such a requirement would have further limited the sample size. Consequently, analysis has been undertaken for all targets and bidders for which data was available. The analysis (using the index model, as explained below) included 71 cross-border bidders and 143 UK target

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120 Bidding companies have only been included in the final analysis if there were no missing values during the 'event window' stretching from t-8 to t+5, where t refers to the month of the bid announcement. (Target companies were excluded if there were missing values during the period t-8, t. However, for some target companies, a share listing was not available for the month after the bid announcement. Consequently, sample sizes for target companies for month t+1 is marginally smaller than for the other event periods, as discussed further below).

121 Gratitude is expressed to staff of the following organisations for their considerable assistance: Amsterdam Stock Exchange, Association Vaudoise des Instituts Financiers Lausanne, Australian Stock Exchange, Baden-Wüttembergische Wertpapierbörse zu Stuttgart, Barclays Registrars, Bavarian Stock Exchange in Munich, Bourse de Genève, Bremer Wertpapierbörse, Börsenkammer des Kantons Basel-Stadt, Central Registration Hong Kong, Consiglio di Borsa Milano, Datastream International, Irish Stock Exchange, Jardine Matheson, Københavns Fondsbørs, New Zealand Stock Exchange, Nobel Industrier, Oslo Børs, Procordia, Rheinisch-Westfälische Börse zu Düsseldorf, SBF Bourse de Paris, SBF Nancy, SBF Nantes, Stock Exchange of Hong Kong, Toronto Stock Exchange, Vancouver Stock Exchange, Värdepapperscentralen VPC, and West Canada Depository Trust Company.

companies in cross-border acquisitions. (Sufficient data was available for an analysis of matched pairs of target and bidding companies in 55 cross-border acquisitions, as detailed in Chapter 9). The detailed listing of the companies included in the analysis of cross-border acquisitions, is contained in Appendix A at the back of the thesis.

A breakdown of the nationality of the bidding companies in the cross-border acquisitions is given in Table 6.2. As can be seen, sufficient data was available for analysis of bidding companies from 14 different countries, and for UK target companies bid for by foreign entities based in 22 different countries.

Table 6.2

Cross-Border Acquisitions - Sample Sizes By Nationality of Bidding Companies - Index Model

This table lists the nationality of the bidding companies in cross-border takeover bids for listed UK companies announced after 1 January 1986 and for which thew bid outcome was known prior to 31 December 1991. Analysis was attempted for virtually all bids (exceptions detailed in Table 6.1). Cross-border targets refers to UK target companies which received takeover bids from entities listed abroad. Cross-border bidders refers to the overseas entities which bid for UK listed companies. The final sample sizes for cross-border targets and bidders are smaller than the number of bids for which analysis was attempted, due to limited data availability.

	Bids for which Analysis Attempted		Sample Size			
			Cross-Border Targets		Cross-Border Bidders	
Austria	1	0.6%	1	0.7%	0	0.0%
Australia	12	6.9%	11	7.7%	4	5.6%
Belgium	1	0.6%	1	0.7%	0	0.0%
Bermuda	1	0.6%	0	0.0%	0	0.0%
British Virgin Islands	2	1.2%	1	0.7%	0	0.0%
Canada	5	2.9%	4	2.8%	4	5.6%
Cayman Islands	2	1.2%	0	0.0%	0	0.0%
Denmark	2	1.2%	1	0.7%	1	1.4%
Eire	7	4.0%	6	4.2%	6	8.5%

Table 6.2. (continued).

	Bids for which Analysis Attempted		Sample Size			
			Cross-Border Targets		Cross-Border Bidders	
Finland	3	1.7%	3	2.1%	0	0.0%
France	24	13.8%	20	14.0%	10	14.1%
Germany	9	5.2%	8	6.0%	5	7.0%
Hong Kong	1	0.6%	1	0.7%	0	0.0%
Italy	1	0.6%	0	0.0%	1	1.4%
Japan	6	3.5%	6	4.2%	5	7.0%
Liechtenstein	3	1.7%	3	2.1%	0	0.0%
Luxembourg	1	0.6%	0	0.0%	0	0.0%
Malaysia	1	0.6%	0	0.0%	0	0.0%
Netherlands	7	4.0%	7	4.9%	4	5.6%
Norway	2	1.2%	1	0.7%	1	1.4%
New Zealand	12	6.9%	9	6.3%	3	4.2%
Panama	1	0.6%	1	0.7%	0	0.0%
South Africa	2	1.2%	2	1.4%	0	0.0%
Saudi Arabia	1	0.6%	1	0.7%	0	0.0%
Sweden	14	8.1%	13	9.1%	3	4.2%
Switzerland	15	8.6%	12	8.4%	7	9.9%
USA	38	21.8%	31	21.7%	17	23.7%
TOTAL	**174**	100%	**143**	100%	**71**	100%

6.3.2. Domestic Takeover Bids

The total number of domestic acquisitions during the period of investigation was 756. A similar screening process to that used for the cross-border takeover bids was applied. Firstly, takeover bids for preference shares were excluded from the analysis,

as this thesis is restricted to acquisitions of ordinary shares. Three bids were excluded on this criteria. Secondly, 8 partial takeover bids were eliminated from the sample. Thirdly, a total of 43 of the domestic takeover bids were for investment trusts, which fall outwith the scope of this study. Fourthly, 6 offers for water companies were rejected. The fifth restriction imposed was to exclude 9 domestic joint bids. The final group of bids to be rejected, were 3 takeover attempts which represented a second bid by the same bidder for the same target within a 12 month period. A further problem encountered, was that of insufficient information in the Acquisitions Monthly listings. Unfortunately, this necessitated the exclusion of a further 15 domestic takeover bids. This screening process left a total of 669 domestic takeover bids for further analysis. These takeover bids are detailed in Appendix B at the end of the thesis.

However, as was the case for the cross-border bids, data availability proved to be a problem. Sufficient data was available for 568 domestic bidders and 414 target companies in domestic acquisitions. (Sufficient data was available for a full analysis of the joint abnormal returns to matched pairs of target and bidding companies in 356 domestic acquisitions, as detailed in Chapter 9). A summary of the overall sample sizes are given in Table 6.3. The sample sizes were smaller for the capital asset pricing model and the market model than for the index model, due to additional data requirements of the capital asset pricing model and the market model relative to that of the index model.

A breakdown of the various samples by year of bid announcement is contained in Table 6.4. As can be seen from this table, there were relatively few domestic takeover bids during the last two years of the analysis. This corresponds to the general decline in domestic takeover activity, as depicted in Figure 1.1 in the Introduction to this thesis. With regard to the overseas bidding companies, it can be seen that the lack of available data was a particular problem for acquisitions during the first two years of the analysis.

Table 6.3.

Overall Sample Sizes

IM = index model, MM = market model, and CAPM = capital asset pricing model. The models are discussed in section 6.4.5. t refers to time period (month) relative to the month of the bid announcement.

TARGET COMPANIES						
	Cross-Border Acquisitions			Domestic Acquisitions		
Time period	IM	MM	CAPM	IM	MM	CAPM
t-8, t	143	118	118	568	442	442
t+1	126	104	104	550	427	427

BIDDING COMPANIES						
	Cross-Border Acquisitions			Domestic Acquisitions		
Time period	IM	MM	CAPM	IM	MM	CAPM
t-8, t+5	71	50	48	414	361	361

6.3.3. Bid Characteristics

As explained in the previous chapter, this thesis includes an analysis of the impact on the level of cumulative abnormal returns of various bid characteristics. The variables included in the cross-sectional analysis are as follows:

NATIONALITY Nationality is a dummy variable taking the value 0 if the bidder was based in the UK (domestic bid), and 1 if the bidder was based abroad (cross-border bid). This variable provides a measure of any cross-border effect.

OUTCOME Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed.

COMPETITIVE Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid).

Table 6.4.

Sample Sizes By Year of Bid Announcement - Index Model

Analysis was attempted for almost all takeover bids announced after 1 January 1986 and for which the bid outcome was known prior to 31 December 1991. Please see text above for an explanation as to why a few bids were rejected from this study. Sample sizes smaller than number of bids for which analysis attempted, due to data insufficiency.

	Domestic Targets				Cross-Border Targets				Domestic Bidders				Cross-Border Bidders			
	Analysis Attempted		Sample		Analysis Attempted		Sample		Analysis Attempted		Sample		Analysis Attempted		Sample	
86	178	26.6%	151	26.6%	29	16.7%	24	16.8%	178	26.6%	122	29.5%	29	16.7%	8	11.3%
87	143	21.4%	118	20.8%	21	12.1%	13	9.1%	143	21.4%	96	23.2%	21	12.1%	4	5.6%
88	125	18.7%	109	19.2%	23	13.2%	19	13.3%	125	18.7%	80	19.3%	23	13.2%	14	19.7%
89	108	16.1%	90	15.8%	36	20.7%	30	21.0%	108	16.1%	58	14.0%	36	20.7%	16	22.5%
90	56	8.4%	50	8.8%	38	21.8%	34	23.8%	56	8.4%	33	8.0%	38	21.8%	16	22.5%
91	59	8.8%	50	8.8%	27	15.5%	23	16.1%	59	8.8%	25	6.0%	27	15.5%	13	18.3%
Total	669	100%	568	100%	174	100%	143	100%	669	100%	414	100%	174	100%	71	100%

REVISED Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased).

PAY Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer provided target company shareholders with a full cash alternative.

STAKE Stake is a dummy variable taking the value 1 if the bidding company held a stake in the target company prior to the bid announcement, and 0 if no such pre-bid stake was present.

RELSIZE Rel Size is the pre-bid equity market value of the target divided by the pre-bid market value of the bidder.

SIZE Size is the natural log of the pre-bid market value (in £ million) of the company in question.

Table 6.5. provides summary information regarding the characteristics of the takeover bids. As can be clearly seen from this table, overseas bidders tended to be very large organisations, although large variations were observed. Indeed, the pre-bid market value of the overseas bidders averaged 4.7 times that of the domestic bidders. Overseas bidding companies also tended to bid for relatively large UK targets.

Other noteworthy differences between domestic and cross-border acquisitions, include the greater reliance on cash financing in cross-border than in domestic acquisitions. This is as one would expect if UK investors are reluctant to receive payment in the form of securities issued by companies based abroad. Overseas bidders more often than domestic bidders held a pre-bid stake in the target. However, despite this difference in the occurrence of pre-bid stakes, and the fact that marginally more domestic than cross-border bids were competitive, the difference in the success rates between domestic and cross-border acquisitions was surprisingly marginal.

Table 6.5.

Analysis of Bid Characteristics - Index Model

Variables as defined in the text.

Bid characteristics		Cross-Border Targets	Domestic Targets	Cross-Border Bidders	Domestic Bidders
Sample size		143	568	71	414
Market value (£m)	Mean	151.1	103.5	2374.6	503.5
	Std.	331.8	382.1	3554.0	1233.3
Outcome	Successful	112 (78.3%)	452 (79.6%)	59 (83.1%)	326 (78.7%)
	Failed	31 (21.7%)	116 (20.4%)	12 (16.9%)	88 (21.2%)
Competitive	Single bidder	114 (79.7%)	492 (86.6%)	57 (80.3%)	358 (86.5%)
	Competitive	29 (20.3%)	76 (13.4%)	14 (19.7%)	56 (13.5%)
Revised	Not revised	120 (83.9%)	493 (86.8%)	63 (88.7%)	354 (85.5%)
	Offer revised	23 (16.1%)	75 (13.2%)	8 (11.3%)	60 (14.5%)
Pay	Full cash alternative	138 (96.5%)	369 (65.0%)	68 (95.8%)	271 (65.5%)
	No cash alternative	5 (3.5%)	199 (35.0%)	3 (4.2%)	143 (34.5%)
Stake	No stake	82 (57.3%)	433 (76.2%)	41 (57.7%)	309 (74.6%)
	Stake	61 (42.7%)	135 (23.8%)	30 (42.2%)	105 (25.4%)

6.4. Methodology

The fundamental aim of this thesis is to establish the degree to which shareholders of target and bidding companies engaged in domestic and cross-border acquisitions into the UK over the 1986-1991 period gained or lost from these transactions, as well as to analyse the *differences* in abnormal returns to the different groups of shareholders. The following sections sets out the methodology applied to achieve these objectives.

6.4.1. Event Study Methodology

Event study methodology, as first developed by Fama *et al.* (1969), involves estimating the impact on share returns of a firm-specific event, such as the announcement of a takeover bid. The abnormal return associated with the event, also known as the 'wealth effect', is a measure of the gains or losses to shareholders attributable to the event. The abnormal return is calculated as the difference between the 'Actual' (observed) return on the share and the return on the share one would have 'Expected' had no event taken place:

Abnormal return = Actual return - Expected return.

The actual return, as the name implies, is the observed return on the share (through dividend payments and share price changes). The expected return is a measure of the return on the share one would have expected had no event taken place. Following the event, the expected return is an unobservable quantity, thus having to be estimated.

There are several possible models, with varying degree of sophistication and complexity, which can be used for estimating expected returns. Brown and Warner (1980 and 1985) applied simulation data to test various models, and concluded that,

> "we find that a simple methodology based on the market model performs well under a wide variety of conditions. In some situations, even simpler methods which do not explicitly adjust for marketwide factors or for risk perform no worse than the market model". (Brown and Warner (1980), p. 280).

Dyckman *et al.* (1984) undertook similar simulation analysis to evaluate the merit of the mean-adjusted returns method, the index model and the market model. They argued that the three models had similar abilities in detecting abnormal returns, "...although we find a slight preference for the Market Model. While this difference is

statistically significant, it does not appear important". (pp. 28-29).

Malatesta (1986), in a simulation test of a fairly complex joint generalised least squares technique, found that "the results provide no evidence that joint generalized least squares is superior to simpler procedures". (p. 27).

As discussed in the literature review, papers applying more than one test model (such as e.g., Franks and Harris (1989) and Limmack (1991)) have occasionally obtained conflicting results depending on the return generating hypothesis applied. Authors such as Limmack (1991) therefore argued in favour of using more than one model.

In this study, three different test models have been applied. These are the capital asset pricing model (CAPM), the market model (MM), and lastly, the index model (IM). All three models adjust for general market movements, while the first two models also allow for different levels of company risk. The detailed specifications of these models are discussed below in section 6.4.5.

6.4.2. Parameter Estimation Period and 'Event Window'

If stock markets are efficient, share prices should react quickly to the release of new information (Fama (1991)). However, as indicated in the literature review, previous studies have suggested that, with regard to takeovers, information appears to leak to the market prior to the official bid announcement[122].

Magenheim and Mueller (1988) argued that analysis of takeover effects would be relatively easy "...if all of the relevant information regarding an acquisition were to become public on the day the acquisition is announced and the market could be

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122 For example, Franks *et al.* (1977) found that share prices of target companies started rising significantly three months prior to the announcement of the takeover bid. Similar results were obtained by e.g., Franks and Harris (1989), Limmack (1991), and Kennedy and Limmack (1996). Hannigan (1988) argued that "...take-overs provide prime insider dealing opportunities...", and used an *Acquisitions Monthly* survey (published march 1986) to support her argument: "*Acquisitions Monthly* ... found that of 1200 mergers studied, the price of the target rose by 54% during the 6 months before the bid, 39% during the month before and 25% on the day before". (p. 18). Although the *Acquisitions Monthly* survey looked exclusively at target companies (rather than both targets and bidders as in this study), it is plausible that if investors can predict who will become takeover targets as much as six months prior to the bid announcement, they may also be able to identify the bidding companies.

assumed to adjust fully in that day to the new information. But news of an acquisition is known to leak into the market prior to the first public announcement, and it is unrealistic to assume that the market is capable of predicting the full future consequences of an acquisition immediately upon learning of it". (p. 172). In addition, to establish whether the post bid share price performance differ between, for example, successful and failed bidders (as found by e.g., Asquith (1983) and Limmack (1991)), it is necessary to include a period subsequent to the bid announcement in the analysis. Consequently, event windows covering only the announcement day or a few days surrounding it, are unlikely to capture the full stock market impact of the acquisition. To overcome these possible problems, a fairly long period of analysis (or 'event window') has been applied in this study, extending from eight months prior to the month of the bid announcement (t-8) to five months after the bid announcement (t+5) for bidding companies and one month after the bid announcement (t+1) for targets[123] and joint abnormal returns to target and bidding company shareholders.

The capital asset pricing model and the market model base expectations regarding share returns during the event period on the relationship between market and share returns during some other period unrelated to the event. This period, known as the parameter estimation period, is usually taken as a period *prior* to the bid announcement, although some studies, such as Mandelker (1974), Conn and Connell (1990), Connell and Conn (1993) and Waheed and Mathur (1995) have also applied other estimation periods. The capital asset pricing model and market model parameters (α and β) should be estimated over a period not affected by the forthcoming event. As previous studies have found share returns to rise significantly several months prior to the official bid announcement, a 60-month parameter estimation period, stretching from t-68 to t-9, where t refers to the month of the bid

123 The majority of target companies shares are delisted soon after bid announcement. Consequently, data was not available for all target companies during month t+1.

announcement[124], has been applied in this study.

6.4.3. Return Data

With all three models applied in this study for estimating expected returns, return data (incorporating dividend payments) rather than purely price data should be applied. Return on a share can be calculated either on a discrete or a logarithmic basis. Strong (1992) argued that,

> "there are both theoretical and empirical reasons for preferring logarithmic returns. Theoretically, logarithmic returns are analytically more tractable when linking together sub-period returns over longer intervals (simply add up the sub-period returns). Empirically, logarithmic returns are more likely to be normally distributed and so conform to the assumptions of standard statistical techniques." (p. 535).

Such log returns have been applied in this study, calculated as:

$$R_{it} = \log[(P_{it}+D_{it})/P_{it-1}]$$

where

P_{it} = the price of security i at the end of period t,

D_{it} = dividend (if any) announced for share i during time period t, and

P_{it-1} = the price of security i at the end of time period t-1 (adjusted for any capitalisation changes).

Monthly log return data for domestic companies (cross-border takeover targets as well as bidders and targets in domestic acquisitions) was obtained from the London Business School Share Price Database, while for overseas bidders return data had to be calculated separately from share price and dividend data, obtained from Datastream and various other sources.

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124 The capital asset pricing model and the market model have only been applied for companies where at least 30 observations were available during the parameter estimation period.

6.4.4. Choice of Market Indices

The share performance of the overseas bidding companies are compared to the performance of a stock market index in the company's *home* market. It was decided to use the Financial Times World Index for the country in question as a proxy for calculating the return on the relevant market (R_m)[125]. The main advantage of the FT World Indices are that they are calculated on a consistent basis, weighted according to market capitalisation and using arithmetic rather than geometric averaging[126]. The FT World Indices are, however, only available from January 1981. This has slightly reduced the number of observations available for the beta estimation for takeover bids that took place during 1986[127].

As is the case with market indices in general, the FT World Indices do not adjust for dividend payments. These indices are in other words price indices. Ideally, adjustment should therefore be made for dividend payments by companies constituting the index. However, obtaining the information required for such an adjustment would be immensely complicated and time consuming. Another approach is to make an adjustment for the *overall* dividend yield on the market. This approach was, for example, used by Dimson and March (1983 and 1986), who stated that "index returns are calculated by incorporating the published dividend yield...". (1986, p. 118). However, such an approach was not possible in this study, again due to data limitations. Dividend yield information for the FT World Indices is only available from February 1986 onwards. Regrettably, it was therefore necessary to calculate return

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125 Conn and Connell (1990) applied both a domestic market model (DMM) and an international market model (IMM). They concluded, however, that "...there is no compelling reason to incur the extra research costs associated with the more complex IMM". (p. 708). Consequently, in this study domestic models are used, with the market portfolio proxied by the stock market index in the company's home market.

126 Some indices, especially older ones, are calculated in such a way that serious biases may be introduced. (Economist (1996)). For example, the American Dow Jones index "...is price-weighted, with a stock with a $100 share price counting for twice as much as a $50 share". (Financial Times (1996)). The old FT-30 index provides a geometric rather than an arithmetic mean. (Financial Times (1996)). The FT World Indices do not suffer from such problems. However, as pointed out by e.g., Roll (1992), the FT indices "...generally include only the larger and more liquid individuals stocks". (p. 8).

127 For bids taking place in e.g., January 1986, the 60 month beta estimation period should ideally have included data from May 1980 onwards.

on the market indices without making adjustments for dividend payments as follows:

$$R_{mt} = \log(FTWI_t/FTWI_{t-1})$$

where

FTWI = Financial Times World Index price level for the relevant country.

For individual companies, the adjustment for dividend payments have an important impact on the return data. This is due to dividend payments being "lumped" into one (eg for Canadian, Danish, New Zealand, Norwegian and Swiss companies), two (eg in Ireland, and Britain), or four (eg US) payments per year. For the market as a whole, however, particularly if an overall annual dividend yield rate is being applied, the adjustment for dividend payments is very smooth. Consequently, not adjusting R_m for dividend payments is likely to introduce much less bias than would have been the effect of not adjusting R_i[128].

The lack of sufficient dividend yield data caused problems in calculating the 'true' yield on the market. Roll (1977) went further and argued that the stock market index is in itself misspecified as a proxy for the return on the market. However, with regard to the problems in calculating market returns, Schipper and Thompson (1983) argued that "...whatever bias result from misspecification should be contained in the entire matrix of residuals, both in and out of event periods. Unusual residual behaviour in the event periods, relative to the residuals in the non-event periods, is suggestive of something more than model misspecification". (p. 96). Thus, despite the methodological difficulties encountered in this study (some of which are discussed in more detail in section 6.5), it is believed that the abnormal returns (and the differences in abnormal returns between different groups of shareholders) obtained in this study give a fair indication of the impact on shareholder returns from acquisitions in or into the UK.

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128 In his PhD thesis on cross-border acquisitions into the US, Song (1993) did not adjust share returns (R_i) for dividend payments.

6.4.5. Event Study Methodologies Applied in Study

As mentioned above, three different event study methodologies have been applied in this study. This section contains a discussion of the capital asset pricing model (CAPM), the market model (MM) and the index model (IM) as applied in the analysis.

a) The Capital Asset Pricing Model

The theoretical assumption underlying the capital asset pricing model, is that the rate of return on a company's shares should be determined by the company's level of systematic risk (as measured by β), the return on the market, and the risk free rate of return, as follows:

$$R_{it} = R_{ft} + \beta_i(R_{mt} - R_{ft}) + \epsilon_{it}$$

where

R_{it} = log return on share i (as previously defined) during time period t,

R_{ft} = the risk free rate of interest[129] during time period t[130],

β_i = the slope of the regression line (a measure of systematic risk of share i)

R_{mt} = log return on market (as previously defined) in time period t, and

ϵ_{it} = the regression residual.

β values were calculated using up to 60 monthly observations[131] from t-68 to t-9, where t refers to the month of the bid announcement[132]. Abnormal returns (AR)

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129 Where available (from Datastream), a short-term (generally 3 month) interest rate has been applied as a proxy for the risk-free rate of return. The specific interest rates applied in this study were as follows: Australia = 3 months Treasury bills, Canada = 3 months Treasury bills (auction), Denmark = Discount rate, Eire = 3 months, France = 3 month money, Japan = 3 month bills, Netherlands = Netherland Interbank 3 months, New Zealand = Interbank 3 months, Norway = Discount rate, Sweden = Commercial Bank Prime Lending, Switzerland = Commercial Bank Prime Lending, United Kingdom = 3 months Treasury bills (discount), United States = 13 weeks Treasury bills (discount), and West Germany = Frankfurt Interbank 3 months.

130 The interest rates have been converted from annual rates to monthly rates using 12th root.

131 Neither the capital asset pricing model not the market model have been applied if less than 30 observations were available during the parameter estimation period.

132 Limmack (1991) estimated parameters over a period from 67 to 7 months prior to the month of the bid announcement. Limmack excluded the period from t-6 to t-1 from the parameter estimation period, so as to avoid any problem of the parameters being influenced by bids being anticipated. As Limmack obtained fairly high mean alpha values for bidding companies (0.006), it was decided to be even more cautious and

were calculated for each month during the test period (from t-8 to t+5 for bidders, and from t-8 to t+1 for targets) as:

$$AR_{it} = R_{it} - [R_{ft} + \beta_i(R_{mt}-R_{ft})]$$

The capital asset pricing model has been extensively tested, and several papers have questioned the assumptions underlying the model. For example, Fama and French (1992 and 1996) argued that β is *not* successful in explaining cross-sectional variations in share returns. Instead, Fama and French argued that share returns were associated with company size (discussed further in section 6.5.2) and the ratio of book to market value of equity. Handa *et al.* (1993) also rejected CAPM, but argued that the model was less inefficient the longer the return measurement interval. Reid (1980) expressed concern regarding the application of CAPM in the analysis of mergers and acquisitions.

> "...One is left with a considerable feeling of discomfort with the way a very special theoretical result, based on full general equilibrium reasoning, under the assumption of identical estimates of the distribution of returns by all agents, has been asked to provide a simple answer to the complicated question of whether a takeover or merger is wealth creating". (p. 12).

Despite the potential problems associated with the capital asset pricing model, the model has been applied in this study. While it is recognised that this model rests on strict assumptions (which may not be met in practice), it is believed that the results obtained using this model, particularly when viewed in conjunction with the other two models, provide a valuable insight into the impact of acquisitions on shareholder wealth.

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use a slightly earlier time period (t-68, t-9) for the parameter estimation. (However, as discussed in section 6.5.1, the high bidding company α values observed in this study may indicate that even this time period was not a period of 'normal' returns). Conn and Connell (1990) observed large abnormal returns to US targets in cross-border acquisitions during the period from t-9 to t-2. Thus, including this pre-bid period in the event window in this study allows for a comparison with their results.

b) The Market Model

Rather than being based on a theoretical return generating framework as the capital asset pricing model, the market model is based on an empirical relationship between market and share returns. As with the capital asset pricing model, the market model parameters were estimated on monthly data for the time period t-68 to t-9. The equation applied was as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

where the variables are as defined for the capital asset pricing model, except for α, which is the regression intercept.

Abnormal returns were calculated for the analysis period as

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

The key assumption of the market model (as applied in this study) is that the level of expected return on a share is determined by a share's level of systematic risk, β, and that the relationship remains constant over time.

As was the case with CAPM, application of the market model has also been criticised in the literature. Garrett (1991), for example, argues that "...the market model as it stands may be inappropriate". (abstract). Similar views have been put forward by e.g., Coutts *et al.* (1994 and 1995). As mentioned above, Roll (1977) argued that the market portfolio as applied in the market model, may be misspecified. Despite the reservations expressed regarding the market model, the model has been applied in this study, and as evident from the literature review in Chapters 3 and 4, the market model is the most commonly used model in the existing literature. As argued by Schipper and Thomson (1983) (and discussed in section 6.4.4), despite the potential problems with model specification, any *changes* in the abnormal returns at the time of a takeover provides an indication of the impact the event has had on shareholder wealth.

c) The Index Model

The simplest model applied is the index model. This model is a variation of the market model, but assumes α to be zero and β to be 1 for every share. In other words, the expected rate of return on any share is equal to the return on the stock market index for the same time period:

$$R_{it} = R_{mt} + \epsilon_{it}$$

Abnormal returns are simply calculated as the difference between the return on the share and the return on the market:

$$AR_{it} = R_{it} - R_{mt}$$

While the assumptions of the index model may be unrealistic, the model has gained increased recognition in the takeover literature. For example, Franks and Harris (1989), Limmack (1991), and Parkinson and Dobbins (1993) all applied the index model (as well as other models), while Limmack (1990) based his analysis exclusively on the index model. Brown and Warner (1980 and 1985) argued that in most instances, the index model was no worse than the market model at detecting abnormal returns. However, a number of advantages of the index model were of particular relevance to this study. Firstly, due to the limited data requirements of the index model, a larger number of acquisitions could be analysed using this model than was the case for either the capital asset pricing model or the market model[133]. Secondly, as discussed in section 6.5., a number of methodological difficulties, in particular with regard to the estimation of alpha and beta values, raise questions regarding the appropriateness of the market model and, to a lesser extent, the capital asset pricing model.

The analysis of the level of abnormal returns to target and bidding company shareholders in cross-border and domestic acquisitions, and the analysis of cross-border effects (as contained in Chapters 7 and 8), has been based on all three test models. However, the cross-sectional analysis of abnormal returns (contained in

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133 Sample sizes are detailed in Table 6.3.

Chapters 7, 8 and 9), as well as the analysis of joint abnormal returns to pairs of target and bidding company shareholders (Chapter 9), is based on the index model[134]. Although the majority of previous research (as discussed in the literature review) has been based on the market model, the index model was selected for the cross-sectional analysis in order to maintain as large a sample size as possible.

6.4.6. Statistical Testing of Average Abnormal and Cumulative Abnormal Returns

A number of different methods have been applied in the existing literature for measuring the level of statistical significance of the abnormal return estimates. One method, as described by Strong (1992) is to "... calculate the average abnormal return and standard error across event securities to give a t-statistic as follows" (pp. 544-545):

$$\frac{\bar{\epsilon}_t}{SE(\bar{\epsilon}_t)} = \frac{\frac{1}{N}\sum_{i=1}^{N}\hat{\epsilon}_{it}}{\left(\frac{1}{N-1}\sum_{i=1}^{N}(\hat{\epsilon}_{it}-\bar{\epsilon}_t)^2\right)^{1/2}} \sim t(N-1)$$

where

$\bar{\epsilon}_t$ = mean prediction error (estimated average abnormal return) for time period t,

$\hat{\epsilon}_{it}$ = prediction error (estimated abnormal return) for security i during time period t,

SE = standard error,

N = number of companies in the sample.

The test statistic is distributed according to the Student-*t* distribution with N-1 degrees of freedom. This method has been applied by e.g., Franks *et al.* (1991), and has been used in this study for the index model and the capital asset pricing model.

There are, however, some potential limitations of the t-test, as this test,

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134 Similarly, while Franks and Harris (1989) and Parkinson and Dobbins (1993) applied the same three test models, their results were reported using only the index model.

"...assumes independent drawings from an identically distributed normal population. It is therefore implicitly assumed that the mean effect of the event is identical across securities. In addition, no allowance is made for variances of abnormal returns being unequal across securities or for cross-correlation in abnormal returns". (Strong (1992), p. 545).

Salinger (1992) added that,

"...ignoring either the intertemporal or contemporaneous correlation of residuals can result in significant underestimates of standard errors". (p. 39).

Several researchers (such as e.g., Fatemi and Furtado (1988) and Doukas and Travlos (1988)) have adopted methods similar to Brown and Warner's Crude Dependence Adjustment. This method takes into account "any cross-sectional dependence in the performance measures..." (Brown and Warner (1980), p. 251). This method has, however, *not* been adopted in this study. The takeover bids analysed in this study took place over a 6 year period. There is therefore limited clustering of event months, and no logical reason for expecting cross-sectional dependencies to be present[135].

A more powerful test than the Crude Dependence Adjustment, is the Patell Standardised Residual (PSR) test, developed by Patell (1976)[136]. "...When the parameters of the market model are estimated from observations outside the TP [test period], abnormal returns are prediction errors rather than true residuals and should therefore be standardised...". (Strong, (1992), p. 545).

"The PSR test explicitly recognises the possibility of different residual variances across securities, and weights the abnormal returns accordingly. But, as Patell notes,

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135 In addition, in order to undertake the Crude Dependence Adjustment, a full set of residuals for the parameter estimation period would have been required. While such residuals were available for the market model and the capital asset pricing model, they were frequently not available for the index model (due to limited data availability). If applying the Crude Dependence Adjustment to index model results, the index model sample sizes would have been substantially reduced (equivalent to the market model samples).

136 The PSR test is explained in detail in Patell (1976), pp. 254-260, and Strong (1992), pp. 545-547. The following section draws extensively on the material from these two sources. The test has been used in other studies, such as Bradley *et al.* (1988), Fatemi and Furtado (1988), Kumar *et al.* (1992) and Song (1993).

the PSR test continues to assume cross-sectional independence of abnormal returns and no change in residual variances between the ... parameter estimation period and the test period". (Strong (1992), p. 546).

The statistical significance levels of the market model abnormal returns and cumulative abnormal returns were calculated using the Patell Standardised Residuals (PSR) test. In the explanations, the following general notation has been applied:

Estimation period	=	period over which the market model parameters have been estimated (t-68 to t-9 months),
Test period	=	period over which abnormal returns have been estimated (t-8, t+1 for targets and t-8, t+5 for bidders),
^	=	estimated value,
-	=	average/mean value,
i	=	individual security,
t	=	time period.

The procedures involved in calculating PSR can be summarised as follows:

1. Estimate the variance, S^2_i, of the prediction errors (estimated abnormal returns) (ϵ_{it}) during the parameter estimation period,

$$s_i^2 = \frac{\sum_{t=1}^{T} \hat{\epsilon}_{it}^2}{T-2}$$

where

T = number of observations during the estimation period.

2. Calculate C_{it}, which is an adjustment for the increase in variance due to prediction outside the estimation period.

$$C_{it} = 1 + \frac{1}{T} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{t=1}^{T} (R_{mt} - \bar{R}_m)^2}$$

where

R_{mt} = return on market index during time period t, and

$$\bar{R}_m = \frac{1}{T}\sum_{t=1}^{T} R_{mt}$$ = average return on market index during parameter estimation period.

3. Calculate Patell Standardised Residuals (V_{it}). The test statistic (of the statistical significance of the abnormal return for a single company for a single time period) is distributed Student-*t* with T-2 degrees of freedom.

$$V_{it} = \frac{\hat{\epsilon}_{it}}{s_i \sqrt{c_{it}}} \sim t(T-2)$$

4. Calculate the Cumulative Patell Standardised Residuals (W_{iL}) over the event window for each security. The test statistic (of the statistical significance of the cumulative abnormal return for a single company) is distributed Student-*t* with T-2 degrees of freedom.

$$W_{iL} = \frac{1}{\sqrt{L}} \sum_{t=1}^{L} \frac{\hat{\epsilon}_{it}}{s_i \sqrt{C_{it}}} \sim t(T-2)$$

where

L = length of event window (cumulative abnormal returns have been calculated for different lengths of event windows, ranging from 1 to 14 months).

5. Calculate the test statistic (Z_{Vt}) for the standardised average abnormal return for time period t. This test statistic is distributed approximately unit normal for large samples.

$$Z_{Vt} = \frac{\sum_{i=1}^{N} V_{it}}{\left(\sum_{i=1}^{N} \frac{T_i - 2}{T_i - 4}\right)^{1/2}} \sim N(0,1)$$

6. Calculate the test statistic (Z_{WL}) for the standardised average cumulative abnormal return for event window of length L. The test statistic is distributed approximately unit Normal for large N.

$$Z_{WL} = \frac{\sum_{i=1}^{N} W_{iL}}{\left(\sum_{i=1}^{N} \frac{T_i - 2}{T_i - 4}\right)^{1/2}} \sim N(0,1)$$

When testing for the level of statistical significance of the difference in mean abnormal returns to different samples, such as the testing of 'cross-border effects', the t-test for differences in means has been applied. This t-statistic is calculated as follows (Weiss and Hassett (1986), pp. 423):

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(s_1^2/n_1\right) + \left(s_2^2/n_2\right)}} \sim \textit{Student-t}$$

where

$\bar{x}_1$ = mean abnormal return for sample 1,

s_1 = standard deviation of mean abnormal returns for sample 1, and

N_1 = number of observations in sample 1.

The test statistic is distributed Student-t with degrees of freedom (df) given by:

$$df = \frac{\left[\left(s_1^2/n_1\right) + \left(s_2^2/n_2\right)\right]^2}{\frac{\left(s_1^2/n_1\right)^2}{n_1 - 1} + \frac{\left(s_2^2/n_2\right)^2}{n_2 - 1}}$$

6.4.7. Cross-Sectional Analysis

As discussed in Chapter 5, cross-sectional analysis was undertaken in an attempt to ascertain the impact of bid characteristics on the levels of abnormal returns, and on the differences in abnormal returns to shareholders in cross-border and domestic acquisitions (cross-border effects).

As discussed in section 6.3.3, the variables included in the cross-sectional analysis were whether the bid was launched by overseas or domestic bidders (nationality), whether the bid was successful or failed (outcome), whether or not there were more than one bidder pursuing the target company (competitive), whether or not

the terms of the offer were improved (revised), whether or not the offer included a full cash alternative (pay), whether or not the bidding company held shares in the target company prior to the bid announcement (stake), the relative pre-bid market values of the target and bidding companies (rel size), and the market value of the company in question (size).

If explanatory variables in multiple regression analysis (as used in the cross-sectional analysis) are highly correlated, problems of collinearity may occur. The correlation matrices for the explanatory variables are given in Tables C1 to C9 in Appendix C. As can be seen from these tables, the correlation between the various variables was generally low[137]. Consequently, collinearity appears not to have been a serious problem in the cross-sectional analyses. However, for both target and bidding companies in cross-border acquisitions, a surprisingly strong correlation (-0.702) was found between method of payment and the relative size of targets and bidders. It is worth noting, however (as specified in Table 6.4) the number of cross-border acquisitions *not* including a full cash alternative was very small. These results suggest that the few cross-border acquisitions were a full cash alternative was not available involved acquisitions where target company was relatively large (relative to the size of the bidder). In domestic acquisitions, the correlation between pay and relative size was negligible.

In the cross-sectional analysis, index model cumulative abnormal returns have been analysed for the whole analysis period (from t-8 to t+1 for targets and from t-8 to t+5 for bidders). In addition, cross-sectional analysis of pre-bid period (t-8, t-2) and event period (t-1, t) cumulative abnormal returns have been undertaken for both targets and bidders. However, data for the post-bid period (from t+1 to t+5) was only available for bidding companies.

Thirteen different regression specifications are reported in the cross-sectional

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137 E.g., Weiss and Hassett (1986), argued (p. 526) that correlation coefficients between -0.4 and +0.4 indicate only weak linear correlation. Only 6 of the 210 correlation coefficients reported in Appendix C exceed ± 0.4.

analysis (see e.g., Table 7.3). Firstly, each of the explanatory variables are analysed in isolation[138] (regressions 1 to 7). In the final regression (number 13), *all* the explanatory variables are included. In addition, five different regression specifications are analysed, which each applied different subsets of explanatory variables.

As discussed in Chapter 5, De *et al.* (1996) found successful bidding companies to have lost significantly in competitive or revised bids. With regard to target company shareholders, however, Limmack (1993) found competitive and revised offers to have provided significantly different levels of abnormal returns. In regression 8, the effect of bid outcome, bid competition, and revision of offer terms were analysed together, in an attempt to establish which, if any, of these variables account for the cross-sectional variation in abnormal returns.

Regression 9 looks at the link between bid outcome, the existence of competition in the bid, and whether or not the bidder held a stake in the target prior to the bid announcement. It may be hypothesised that offers in which the predator held a stake in the target prior to the offer provided bidders with an advantage over other potential predators (as suggested by e.g., Walkling and Edminster (1995)). If this is the case, one would expect such offers to be less likely to be competitive or to prove unsuccessful than bids in which the bidder held no pre-bid stake[139].

As discussed in section 5.3.4, previous research has suggested that both target and bidding company shareholders obtain higher abnormal returns in cash than in equity offers. As indicated in Table 6.4, a much higher proportion of cross-border bids included a full cash offer than was the case in domestic acquisitions. The differences in the means of payment could therefore potentially help to explain any positive cross-border effect. If method of payment provide a signal to investors regarding the 'true' value of a company's shares (as suggested by e.g., Myers and Majluf (1984), Hansen

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138 In the analysis of cross-border effects as in e.g., Table 7.13, the Nationality variable is included as an additional explanatory variable in all regressions.

139 Appendix C indicates that, as one would expect, competitive bids are more likely to fail than are single-bidder offers. However, contrary to expectations, the correlation between stake and outcome or competition was generally very low.

(1987) and Fishman (1989)), method of payment may be associated with the outcome of the offer or the level of competition for the target[140]. These relationships have been analysed in regressions 10 and 11.

Previous literature has highlighted the impact of both company size and the *relative* size of the target and bidding companies. In regression 12, these two variables were analysed jointly, in order to ascertain which of the two size effects is of most importance.

6.5. Methodological Difficulties Encountered in the Study

6.5.1. Parameter Estimation

While the share price behaviour of a single company may reasonably be expected to deviate substantially from that of the market index, one would expect a large portfolio of companies to behave in a manner similar to that of the overall market index. Consequently, the mean α for a large portfolio of companies is expected to be close to 0, while the mean β should be close to 1. (This is the assumption underlying the index model). However, such mean values were generally *not* observed for the sample companies in this study. As reported in Table 6.6, the mean α, particularly for bidding companies, was substantially above 0, while the mean market model and capital asset pricing model β's for all samples were below 1. As reported in Table 6.7, previous studies (based on the market model) have obtained similar positive alpha values for bidders and generally, although not consistently, beta values of less than 1.

There are two main potential explanations for these parameter estimates. Firstly, companies involved in takeover activity may in some way be *different* from the companies which constitute the overall market indices. A second possibility is that the α and β values obtained in this study suffer from estimation problems.

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140 It is acknowledged, however, that (as indicated in Appendix C) the correlation between pay and either bid outcome or the level of competition, was generally low.

Table 6.6.

Analysis of Market Model and Capital Asset Pricing Model Parameters

This table reports statistics for the regression coefficients obtained in this study. The parameters have been estimated using a minimum of 30 monthly observations during the 60-month period from t-68 to t-9, where t refers to the month of the bid announcement.

			Cross-Border Targets	Domestic Targets	Cross-Border Bidders	Domestic Bidders
Sample size			118	442	50/48[141]	361
Market Model	Alpha values	Mean	-0.00046	0.00382	0.00923	0.01007
		Std	0.0214	0.0160	0.0183	0.0154
		Max	0.0464	0.0618	0.0881	0.0580
		Min	-0.1422	-0.0491	-0.0282	-0.0486
		Percent negative	46.6%	39.1%	22.0%	20.5%
	Beta values	Mean	0.8570	0.8041	0.7884	0.9216
		Std	0.3500	0.4255	0.4614	0.3750
		Max	1.6134	2.0664	1.6277	2.003
		Min[142]	-0.3628	-2.2047	-0.3883	-0.8974
		Percent negative	1.7%	2.0%	10.0%	2.2%
Capital Asset Pricing Model	Beta values	Mean	0.8592	0.8165	0.8137	0.9488
		Std	0.3514	0.4215	0.4377	0.3651
		Max	1.6184	2.0439	1.6233	1.9909
		Min	-0.4624	-2.0969	-0.1755	-0.8591
		Percent negative	1.7%	2.3%	6.3%	1.4%

Conn and Connell (1990) and Connell and Conn (1993) found that the cumulative abnormal returns were highly sensitive to the period over which the market model parameters were estimated: "The sensitivity of CAR estimates to the different

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141 The sample size of 50 refers to the market model, and 48 to the capital asset pricing model.

142 While the range of beta values obtained in this study was larger than those reported by e.g., Connell and Conn (1993), a similar large spread (from -0.1032 to +2.6101) was obtained by Francis *et al.* (1993).

Table 6.7.

Comparative Analysis of Average Market Model Parameters

Estimation period refers to the time period over which the market model parameters (α and β) were estimated. All studies applied data from the time period *prior* to the period of the bid announcement (pre). For bidding companies, Connell and Conn (1993) also applied parameters estimated over a period after the bid announcement (post) and a combination of the two (pooled).

Bidding Companies

Authors	Market	Estimation period	α	β
Franks and Harris (1989)	UK	Pre	0.0095	0.92
Limmack (1991)	UK	Pre	0.006	0.86
Connell and Conn (1993)	UK	Pre	0.0029	1.0609
		Pooled	-0.0033	1.0706
		Post	-0.0087	1.0488
	US	Pre	0.0014	0.8055
		Pooled	-0.0025	0.8032
		Post	-0.0067	0.8189

Target Companies

Authors	Market	Estimation period	α	β
Franks and Harris (1989)	UK	Pre	0.0044	N.A.
Limmack (1991)	UK	Pre	0.002	0.71
Connell and Conn (1993)	UK	Pre	-0.0008	0.5899
	US	Pre	-0.0031	1.0221

estimation periods appear to result from a significant decline in the intercept term, alpha, of the market model from a positive to a negative value from pre to post-event estimation". (Connell and Conn (1993), p. 63). (See Table 6.7). It may be that companies decide to acquire other companies following a period of unusual good share price performance (as argued by e.g., Kennedy and Limmack (1996)). If the market model parameters are estimated during such an exceptional time period, it is possible that the α values will be inflated. In this study the parameters have been estimated over a long (60 month) period, ending nine months prior to the month of the bid announcement. Such a long parameter estimation period was adopted in an

attempt to overcome some of the parameter estimation problems. However, as shown in Table 6.6, positive alpha values were obtained for almost 80% of the bidding companies. If the assumptions of the capital asset pricing model hold, one would expect the mean market model alpha values to be close to $(1-\beta_i)R_f$. If so, the mean alpha value should be 0.00112 for cross-border and 0.00044 for domestic bidders[143]. The observed alpha values for bidding companies are, however, substantially above these levels. The high positive mean alpha values indicate that over the 14 month event period (t-8, t+5), the average overseas bidding company and the average domestic bidding company is expected to have a rate of return of 11.36% or 13.48%, respectively, *in addition* to the rate of return required to compensate for the share's level of systematic risk. These large positive mean α values may indicate that even this long parameter estimation period was insufficient to overcome the problem of positive mean α values being caused by exceptionally good pre-bid share performance of both overseas and domestic bidding companies. The high α values explain why, as discussed in Chapter 8, the market model suggested significantly lower abnormal returns to shareholders of bidding companies than did the capital asset pricing model and the index model.

Another interpretation of the high (bidding company) α values and low β values observed in this study, is that these results were caused by 'thin' or nonsynchronous trading. "Nonsynchronous trading of securities introduces into the market model a potentially serious econometric problem of errors in variables". (Scholes and Williams (1977), p. 309). "The major source of bias is the tendency for prices recorded at the end of a time period to represent the outcome of a transaction which occurred earlier in or prior to the period in question". (Dimson (1979), p. 179). As was explained by Fowler *et al.* (1980), β will be downwardly biased if the share is less frequently traded than the index, and upwardly biased if the share is more frequently traded than the

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143 These approximations of the mean expected constant terms are calculated using the capital asset pricing model β values (using data for months t-68 to t-9) and the risk free interest rate for month t.

average share in the index[144].

In this study, high α values and low β values were observed, in particular for the overseas bidding companies. These parameter estimates may have been caused by the shares of the overseas bidding companies being less frequently traded than the stock market indices in the relevant markets. It should be remembered, however, that infrequent trading has generally been found to be of greater concern in studies based on daily rather than monthly data (Scholes and Williams (1977) and Brown and Warner (1985)). In addition, nonsynchronous trading may be predominately a feature of small companies (see Roll (1981)). Although some of the overseas bidding companies included in this study were small, the majority of bidders were large organisations[145]. Thin trading has thus generally been considered to be more of a cause of concern in studies of target companies. The mean β values for the target companies in this study are substantially below 1. However, such low target company β estimates are not restricted to this study. Indeed, as indicated in Table 6.7, several previous studies have reported even lower target company beta values.

Various approaches can be adopted when faced with thin trading problems. In an analysis of insider trading, Pope *et al.* (1980) applied a screening process whereby "...any thinly-traded security was eliminated from the sample..." (p. 365). Such a procedure has not been applied in this study for two main reasons. Firstly, such a procedure would require data on the occurrence of non-trading, something which was not readily available. A potentially more serious problem, however, would have been the reduction in the sample sizes. Consequently, no attempt has been made to eliminate infrequently traded shares from the sample.

Another approach is to try to correct the beta values for the effect of thin trading,

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144 In the UK, share price data is based on price quotations, not transaction prices. It is thus possible for the recorded share price in the UK to change even if no transaction takes place. It may thus be argued that the problems associated with slow price adjustments due to thin trading is less of a problem in a market (such as the UK) where price quotations are reported than in other markets (e.g., the US) where share price data refer to transaction prices.

145 As reported in Table 6.5, the mean pre-bid market value of the overseas bidders was £2,374.6 millions, although the standard deviation was high, at £3,554.0 millions.

as did e.g., Franks *et al.* (1977). While these techniques, with various degrees of sophistication (and data requirements), attempt to adjust for the thinness of trading problem, Fowler, Rorke and Jog (1980) were critical as to the usefulness of these models (interestingly, their criticism also extended to a model developed by two of the authors). Fowler *et al.* (1980) evaluated the effectiveness of four beta correction techniques. These were (i) the Scholes and Williams technique (Scholes and Williams (1977)), (ii) the Scholes and Williams Extended (as developed by Fowler and Rorke (1979) and discussed in Fowler *et al.* (1980), (iii) the Scholes and Williams with Jafnike technique, and (iv) the Dimson technique[146] (Dimson (1979)). They concluded that "in general, the OLS [ordinary least squares] beta estimates seem to be better than those produced using any of the bias correcting techniques. ... Overall, there does not yet exist a technique that seems to have general applicability and effectiveness in reducing the thin trading bias so as to produce any significant improvement over the OLS estimator using a conventionally calculated index". (p. 89). Fairly similar conclusions were reached by Brown and Warner (1985), who argued that "methodologies based on procedures suggested by Scholes and Williams and of Dimson do seem to reduce biases in OLS estimates of β. However, the specification and power of the actual tests for abnormal performance is similar to that obtained with the OLS market model, and this conclusion applies to samples having trading frequencies systematically different from average". (p. 26).

Dimson and March (1983) suggested yet another method for obtaining unbiased beta estimates in the presence of thinly traded shares. Their 'trade-to-trade technique' involves matching the length of time over which market and share returns are calculated. This method, however, is rather complicated to implement, as it requires data on the specific timing of the last transaction during each time period (e.g., month).

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146 Fowler and Rorke (1983) argued that "...the Dimson procedure is incorrect and cannot generally be expected to yield consistent beta estimates". (p. 279). Roll (1981), however, had reservations regarding Fowler and Rorke's comment: "Fowler and Rorke argue that Dimson's method is biased. However, I have been unable to ascertain whether they are correct and whether the bias is material if it exists. The empirical evidence [in Roll's paper] indicate that the bias is probably not very large". (p. 885).

Consequently, such a technique has not been adopted in this study[147].

Baker *et al.* (1995) argued that a large number of shares listed on the London Stock Exchange "...may be classified as thinly traded. (p. 1). However, in their analysis, Baker *et al.* found that "calculation of excess returns using models which incorporate leads and lags [one method of correcting for thin trading] does not materially affect the results...". (p. 6).

Despite the various beta correction techniques suggested in the literature, none appears to be very successful at improving the quality of the parameter estimates[148]. Consequently, no adjustment for thin trading have been made to the market model or capital asset pricing model parameters in this study.

6.5.2. Stock Market Size Effect

One of the most important stock market anomalies established in the literature (and one which may have a direct impact on the results obtained in analyses of takeover activity), is the 'size effect'. Banz (1981) and Reinganum (1981) established that companies with low market capitalisation, on average, experienced higher rates of share returns than did larger companies. Although the size effect appeared to have been strong and to have been present over a long time period (e.g., Banz based his analysis on US data from 1926 to 1975), Banz warned against placing too much emphasis on the results:

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147 It is worth noting that Bowie and Bradfield (1996) argued that the trade to trade technique may not fully overcome the problems associated with thin trading. They found that there was a tendency for ordinary least squares to *over*estimate the β coefficients for thinly traded securities.

148 Draper and Paudyal (1995) analysed the effectiveness of various techniques for calculating robust β estimates, to control for the impact of non-normal share distributions. While there was some merit in the application of these techniques when applying daily data, "...a similar conclusion does not hold for estimates derived from monthly data". (p. 175). In addition, they were unable to identify any single beta correction technique which would *universally* provide 'better' β estimates than those obtained using the normal OLS procedures, and argued that "a definitive answer is impossible". (p. 164).

"It is not known whether size *per se* is responsible for the effect or whether size is just a proxy for one or more true unknown factors correlated with size". (Banz (1981), p. 3).

Levis (1988) analysed the average return for 10 different size-portfolios of UK shares over the 1966 to 1982 period. He discovered that "the smallest portfolio seems to outperform its largest counterpart by about 6 per cent per annum". (p. 161). Similarly, looking at average stock returns in the UK over the 1984 to 1989 period, Miller (1992) found the equally weighted geometric mean return to have been 26.2%, while the capitalisation weighted geometric mean was 20.2%. (p. 21). These numbers suggest that, on average, higher returns were earned by smaller companies than by larger ones (as smaller firms would have a higher weighting in the equally weighted than in the value weighted mean). Thus, historically, a size effect appears to have been present in the UK.

Other researchers have argued that other market anomalies were associated with firm size. For example, Keim (1983) argued that 50% of the annual size effect (in the US) took place in January. Similar observations were made by Blume and Stambaug (1983), Reinganum (1983) and Chen (1988). For the UK, Baker and Limmack (1995) and Baker *et al.* (1995) established that the historic excess returns to small firms has been particularly strong in January and to a lesser extent in April. The size effect thus appears to have, at least partially, been associated with a seasonality effect[149].

Pope, Morris and Peel (1990) gave two reasons as to *why* small companies may appear to have higher returns than larger firms:

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149 The possibility of a calendar effect has not been controlled for in this study. While day of the week and month of the year effects may have an impact on estimated abnormal returns (Draper and Paudyal (1995)), controlling for such effects is of more relevance to studies applying either daily data or short 'event windows'. The event window in this study is close to a year (10 months for targets (t-8, t+1) and 14 months (t-8, t+5) for bidders). Consequently, any seasonality effect, if present, would be expected to have little impact on the *overall* level of *estimated average cumulative abnormal returns*. In addition, the takeover announcements analysed in this thesis were spread over a six year period with no apparent clustered in particular calendar months (the bid announcement dates are specified in Appendix A and B). As argued by Baker and Limmack (1995), the findings from their analysis of firm size and monthly seasonalities have particular relevance "...for those undertaking research in which clustering of event dates is likely to be a feature". (p. 2).

> "First, the transactions costs of trading in the shares of small firms are typically greater than those of dealing in the securities of larger companies, and consequently the *realisable* abnormal returns ... will be overstated... Second, in the relatively thin market for small company shares, market prices and quotations tend to be particularly sensitive to the volume of a transaction...". (p. 375).

However, no comprehensive theory regarding the cause of the size effect appears to have been established yet.

The size effect, if present, may cause problems for studies of mergers and acquisitions, such as this one (Dimson and March (1988)). As indicated previously in this chapter, takeover targets tend to be significantly smaller than the average bidding company. If takeover targets are also smaller than the average company in the stock market index used to estimate expected returns, the target may, if a market size anomaly is present, be seen to have outperformed the market even if the event itself had no impact on share prices. Consequently, with e.g., the index model, the 'abnormal' return may be overestimated, with part of the CAR being due to the size effect rather than to the announcement of the bid. As explained by Dimson and March (1984), it has been suggested that the size effect may be less of a problem with the market model, as the alpha term may incorporate the size effect. However, as argued by e.g., Dimson and March (1986), there may still be a problem if the magnitude and direction of the size effect is not constant over time. Indeed, in his analysis, Keim (1983) found the magnitude of the size effect to have been highly volatile.

With regard to bidding companies, these, generally large firms, may have underperformed relative to the index due to their size rather than due to the 'event'. With bidding companies, the market model (pre-bid) alpha values may not be a sufficient adjustment for the size effect (even assuming the size effect to be constant over time), as the size of the bidder will change on the completion of the acquisition. Consequently, the size effect, if large, may result in an underestimate of the

performance of large bidders.

Banz (1981) noted that the size effect may have an important impact on the theory of mergers, as

> "...large firms are able to pay a premium for the stock of small firms since they will be able to discount the same cash flows at a smaller discount rate". (p. 17).

However, Banz did provide a warning, in that

> "naturally, this might turn out to be completely nonsense if size were to be shown to be just a proxy". (p. 17).

Fama and French (1992), however, added further support to the size anomaly. They tested a large number of possible factors which may have an impact on share returns[150]. They found size (as well as book to market value of equity) to be important explanatory variables. Fama and French concluded that the size effect was indeed real, and not simply a proxy for other variables. However, the authors also acknowledged that, while the size effect had been present in the US over the 1963 to 1990 period, we do not know whether the size effect will continue to be present in the future.

Although Fama and French (1992) argued that the size effect is *not* simply a proxy for other anomalies, it is still not fully understood ***why*** returns appears to be higher for small companies than for firms with high market capitalisations. An additional complication present, is that Banz (1981) found the size effect to be neither linear nor exponential. Instead, he observed that very small companies had systematically superior returns, while there was little difference in the return between the medium sized and the large firms. The size effect (if present) can thus only explain acquisitions of small companies, and not mergers between large companies who are already capitalised at a high rate.

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150 Contrary to the capital asset pricing model and the market model predictions, Fama and French found the level of systematic risk (β) to have very little explanatory power of the cross-sectional variation in share returns.

One approach to control for the possibility of a size effect, would be to compare share returns to a portfolio of companies of similar size[151], rather than relying on general market indices. However, such a procedure has not been adopted in this study. Firstly, there is a theoretical consideration. While the size effect appears to be present, little seems to be known as to *why* there should be a size effect. Secondly, as company size would change every time the share price changed, constant adjustments to the portfolios would be required. Such an approach would be excessively cumbersome. Thirdly, as acknowledged by Banz, the direction and magnitude of the size effect varies over time. Malkiel (1990) added: "No sooner had it [the small firm effect] been discovered in the early 1980s than it failed to work: Small stocks were relatively poor performers throughout the bull market of the 1980s". (p. 194). It is thus difficult to allow for size variations in empirical studies. Lakonishok (1988) added that,

> "many of us are very doubtful if small companies will outperform large in the future. For example, in the last three years small companies did not perform well. Therefore, we should not automatically adjust for size". (p. 216).

Further, Lakonishok did not find adding the size effect as a variable in the analysis to have been beneficial. An alternative means of controlling for a size effect, is to include size as an explanatory variable in the cross-sectional analysis. This is the approach adopted in this study, where both the log pre-bid market value of the company in question, as well as the relative size of the target and bidding companies, have been included in the cross-sectional analysis.

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151 Franks *et al.* (1991), Kennedy and Limmack (1996) and Sudarsaman (1996) all applied size-matched control portfolios as one of their benchmarks against which companies' returns were analysed. Kennedy and Limmack argued that the "results ... are consistent with the observation (Franks and Harris, 1989; and Dobbins and Parkinson, 1993) that standard benchmarks over-estimate abnormal performance in targets and under-estimate abnormal performance in bidding companies". (p. 281). However, Kennedy and Limmack do not report the significance of the difference in the level of abnormal returns obtained using either the FT All Share Index or Size-Matched Portfolios.

6.5.3. Analysis of Abnormal Returns to Bidding Companies

a) Bid Programmes and Information Leakage

In addition to the difficulties discussed above, there are further complications encountered in measuring abnormal returns to shareholders of bidding companies. As argued by Roll (1988a), "it is much easier to ascribe price movements to the bid when the firm is surprised. The bidding firm is not surprised, and this complicates the attribution of price movements of *its* shares to the takeover event". (p. 242). However, while Roll is correct in arguing that the managemenet of the bidding company may not have been surprised by the bid, it is far from certain that the bid was not a surprise to the *shareholders* of the bidding company.

A related problem was highlighted by Schipper and Thomson (1983). They measured "...the impact of acquisition activity on firm value by differentiating between specific merger events and programs of acquisition activity". (p. 85). They argued that bidders often announce a plan to undertake several acquisitions in the future. As the stock market is likely to react to announcements of such bid programmes, there is a possibility that the share price reaction to subsequent merger announcements will not reflect the full benefit or cost of the merger, but rather result in an *adjustment* to previous expectations. Similar arguments were put forward by Jensen and Ruback (1983) who argued that "since stock price changes reflect changes in expectations, a merger announcement will have no effect if its terms are fully anticipated in the market. Furthermore, targets are acquired once at most, whereas bidders can engage in prolonged acquisition programs". (p. 18).

Any study focusing on individual acquisition announcements (such as this study) may not capture the full wealth effect (to the bidding company shareholders) of a bid announcement, if the bid is partially anticipated. This is an inherent limitation of this kind of study, and is acknowledged. However, even if the stock market predicts future acquisitions, they are unlikely to know the specific timing and nature of such transactions (otherwise, one would expect there to be no element of 'surprise' to

shareholders of target companies either).

Event study methodology, as the name implies, involves an analysis of the impact on shareholder wealth from certain 'events', such as mergers and acquisitions. The possibility of the event being anticipated is an inherent problem in studies of takeover activity based on such methodology. However, in order to minimise the problem caused by potential bid leakage, this study applies a relatively long event-window, including a period of 8 months prior to the month of the bid announcement. Consequently, the effect of bid leakage should be captured in the pre-bid abnormal returns.

b) Relative Market Values of Target and Bidding Companies

Jensen and Ruback (1983) argued that "...measuring the gains to bidding firms is ... difficult because bidders are generally much larger than target firms. Thus, even when the dollar gains from the takeover are split evenly between bidder and target firms, the dollar gains to bidders translate into smaller percentage gains". (p. 20). In this study the average pre-bid market value of overseas bidders was 15.7 times that of the target companies in cross-border acquisitions, while the respective figure for domestic UK acquisitions was 4.7. As discussed in Chapter 5, previous research (such as Loderer and Martin (1990) and Franks *et al.* (1991)) has highlighted the impact of relative company size on bidding companies' abnormal returns. In this study, company size (as measured by their pre-bid market value of equity), as well as the relative size of the bidder and target, are included as variables in the cross-sectional analysis. In addition, in Chapter 9, the abnormal returns to *pairs* of bidders and targets are analysed. These joint abnormal returns directly control for the different market values of bidders and targets, thus overcoming some of the problems identified by Jensen and Ruback (1983).

c) Joint Abnormal Returns and Pre-Bid Stakes by Bidders in Target Companies

As indicated above, in Chapter 9 joint abnormal returns to shareholders of pairs of target and bidding companies are analysed. Similar analyses were undertaken by Firth (1980) and Limmack (1991) for the UK, and Maquieira *et al.* (1995) for the US. A potential complication in such analysis arise when the acquiring company holds a toehold stake in the target company prior to the bid announcement. When this is the case, the abnormal returns to the bidder will, in part, be influenced by the abnormal return to the target, as reflected in the bidder's share holding. When combining the abnormal returns to targets and bidders, there is thus a potential danger of the joint abnormal returns overstating the total shareholder impact of the acquisition, by double-counting part of the abnormal return to target company shareholders.

One way to overcome this problem would be to calculate the combined cumulative abnormal returns as the abnormal returns to shareholders of the bidding company plus the abnormal return on the fraction of target shares not held by the bidder prior to the bid announcement. This approach would, however, require detailed information on the size of the toehold in every transaction. In this study, data regarding pre-bid stakes was obtained from *Acquisitions Monthly.* This source did not always provide information regarding the size of any toehold. Consequently, as reliable data with regard to the size of any toehold was not available, the transactions have only been classified according to whether or not the bidding company held a stake in the target company prior to launching the takeover bid.

Due to the data limitations, no direct adjustment for the effect of pre-bid stakes by bidders in targets could be made to the joint cumulative abnormal returns[152]. However, the impact of pre-bid stakes is analysed in the cross-sectional analysis.

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152 Similarly, Limmack (1991) and Maquieira *et al.* (1995) made no such adjustment. Firth (1980), however, made such an adjustment, in addition to exclude from the sample bids in which the predator held a stake of 30% or more of the target company's shares prior to launching the bid.

6.5.4. Bidding Company Post-Announcement 'Drift'

Event study methodology is based on the assumption that stock markets are efficient, and that the share price of a company will react quickly to the release of new information. With regard to mergers and acquisitions, the main 'event' has generally been deemed to be the announcement of the takeover bid, although previous research (as indicated in the literature review) has indicated that share prices, particularly of the target companies, react prior to the official bid announcement.

If the stock market is able to fully assess the proposed acquisition at the time of the bid announcement, one would expect abnormal returns, if any, during the period following the bid announcement to be small. However, as discussed in Chapter 8, overseas bidding companies, on average, experienced negative abnormal returns in every month during the post-event period (t+1, t+5). According to the market model, domestic bidding companies also encountered large negative abnormal returns during this period[153]. The results in this study, particularly for cross-border bidders, thus display a strong post-announcement 'drift' in abnormal returns.

Previous research, such as Asquith (1983), Franks *et al.* (1988), Franks and Harris (1989), Limmack (1991) and Agrawal *et al.* (1992), have observed similar negative post-event abnormal returns. As outlined by Fama (1991), there is an ongoing debate as to what may explain such post-event drift. There are at least three possible explanations.

Firstly, it may be the case that price sensitive information was released to the market after the official bid announcement. For example, the eventual outcome of the bid will not have been known until some time after the offer was made. As argued by Roll (1986), "At the original bid announcement ... there is only a probability of success. Between the bid announcement and the final outcome this probability goes to 1.0 for the bids in the successful group. Thus, if the combination itself has value for the

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153 The index model and the capital asset pricing model indicated more neutral post-bid returns to domestic UK bidders. This may suggest that the negative 'drift' in market model returns for domestic bidders were due to estimation problems rather than being an indication of market inefficiency.

bidder, these bidding firms should increase in value over this interim period. They do not". (p. 209).

The proposition that the negative drift is attributable to the failed bidders is not fully supported by the data for cross-border bidders in this study. While the average time from bid announcement until the bid was declared unconditional (in the successful cross-border acquisitions) was approximately 31 days (standard deviation of 29 days), the largest negative post-announcement abnormal returns were observed during month t+5. It is not yet known why such large negative abnormal returns were encountered during this month. A further problem with the information release hypothesis, is that while bidding companies in failed takeover bids performed worse than successful bidders (as indicated in Table 8.4), the negative cumulative abnormal returns over the post-bid period observed for cross-border bidders were not confined to predators in failed bid attempts. All groups of cross-border bidders, on average, appears to have experienced abnormal share price losses during this time period.

A second possible explanation is that the negative post-announcement abnormal returns to bidders were due to the bidding companies overpaying for their targets, but the market being slow to realise this overpayment. This would be consistent with the 'hubris' hypothesis suggested by Roll (1986). "One possibility is that acquiring firms on average pay too much for their target firms, but the market only realizes this slowly; the market is inefficient". (Fama (1991), p. 1602). Market inefficiency was also offered as a possible explanation for post-earnings announcement drift by Brown and Pope (1995). Agrawal *et al.* (1992), however, did not find support for this hypothesis. Limmack (1991) found the negative post-event drift to have been predominately attributable to smaller bidding companies, and argued that "...while the market takes a considerable period to adjust to bids made by smaller companies, market reaction to bids undertaken by larger companies is more rapid and takes place in the period immediately surrounding the bid". (pp. 248-149). The results in this study tend to support Limmack's findings. The cross-sectional analyses (as reported in Chapter 8)

reveal that, in both cross-border and domestic acquisitions, small bidders have performed significantly worse than larger ones during the post-bid (t+1, t+5) period. The slow adjustment of share prices for smaller companies may be associated with the problem of nonsynchroneous trading, as discussed in section 6.5.1.

A third possible explanation for the post-announcement drift is that it is caused by model misspecification. All three models applied in this study (the index model, capital asset pricing model, and the market model) assume β to remain constant over time. The models do therefore not allow for any changes in risk. If the level of systematic risk of the bidder changes over the time period of the bid, this may render the models inappropriate. Franks *et al.* (1991) investigated this point, and argued that "...our results indicate that prior findings of negative postmerger share-price performance for bidders are more likely due to benchmark errors than to mispricing at the time of the announcement". (p. 95). Some researchers have, however, gathered evidence rejecting the theory that post-announcement drift is caused by inadequate measurement of risk changes. Agrawal *et al.* (1992) analysed the post-merger performance of US acquiring firms (1955-1987), and "...conclude that Franks, Harris and Titman's [1991] results are specific to their sample period". (p. 1614). Agrawal *et al.* found that "...neither the firm size effect nor beta estimation problems are the cause of the negative post-merger returns". (p. 1605). In their study of earnings announcements, Ball *et al.* (1993) argued that "the results suggest that post-announcement drift persists after controlling for risk changes, but it is weaker than reported previously [when risk was assumed to be constant]". (p. 632). Brown and Pope (1995) did not find the post-earnings announcement drift to be an artefact of the experimental design. Similarly, Bernard and Thomas (1989) "...concluded that much of our evidence cannot plausibly be reconciled with arguments built on risk measurement but is consistent with a delayed price response". (p. 34). Thus, the explanation of the post-announcement drift still eludes us.

In this study, statistically significant negative abnormal returns were observed for

the post announcement period for cross-border bidders using all three test models, and for domestic bidders using the market model[154]. The post-event drift was particularly strong for smaller bidders, indicating a potential market inefficiency. Insufficient post announcement return data was available to test for a significant change in the level of systematic risk of the overseas bidders[155]. It is therefore not known whether the negative post-announcement abnormal returns were predominately attributable to information release, market inefficiency, or model misspecification. This is an area which would benefit from further research.

6.6. Conclusion

This chapter contains a discussion of the data used and the methodology applied in this study, which focuses on the impact of domestic and cross-border acquisitions into the UK during the 1986-1991 period on the wealth of target and bidding companies' shareholders.

Studies focusing on cross-border acquisitions, such as this one, face problems relating to data availability. As evident from the literature review (Chapter 4), the majority of the literature on cross-border acquisitions tends to be limited to an analysis of US target and/or bidding companies, or an analysis of acquisitions between UK and US companies. This appears to be at least partially attributable to the difficulty of obtaining return data for companies based outside these two countries. As argued by Marr *et al.* (1993), "...data on foreign firm's wealth effects are not readily available". (p. 290). Similarly, while Datta and Puia (1995) recognised the need for studies analysing returns to both target and bidding company shareholders, they argued that "...such studies would definitely have to limit the sample to acquisitions in a few countries (e.g.,

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154 Franks and Harris (1989) did also find large negative post-event abnormal returns with the market model, while no drift was apparent for the index model and the capital asset pricing model. As discussed in section 6.5.1. above, the difference in abnormal returns between the market model and the other models, may be associated with parameter estimation problems.

155 For example, Conn and Connell (1990) applied observations for both the pre- and post-bid period in their estimation of market model parameters.

UK) where stock returns are more readily available". (p. 355). With regard to the cross-border acquisitions, this study contains an analysis of the overseas bidding companies as well as the UK target companies. By contacting numerous stock exchanges and various companies directly (to fill the gaps in the Datastream files), return data was obtained for 71 overseas bidding companies based in 14 different countries. This data allow for an analysis of national variations. In addition, having data for both target and bidding company shareholders (in both cross-border and domestic acquisitions) allows for an analysis of overall (joint) wealth effects, as well as an analysis of cross-border effects.

In the existing literature, various test models (such as the market model, the adjusted β model, the capital asset pricing model and the index model) have been applied in the analysis of the wealth effect of acquisitions. In addition, different parameter estimation periods and event windows have been adopted. As different models may provide substantially different results, there are potential limitations of basing the analysis on a single model. In addition, short event windows (as frequently applied, particularly in US studies) are unlikely to capture the full wealth effect of acquisitions, due to bid leakage and post-event 'drift'. In this study, three different test models have therefore been applied (the market model, the capital asset pricing model and the index model). In addition, long parameter estimation period (from month t-68 to t-9) and long event windows (from t-8 to t+5 for bidders and from t-8 to t+1 for targets and joint returns) have been applied in this study.

This chapter also contains a discussion of the main methodological difficulties encountered in this study, including parameter estimation, size effects, analysing abnormal returns to bidding company shareholders and post-announcement 'drift'. With regard to parameter estimation, the bidding company market model constant (α) terms were on average positive and large. This caused the mean market model abnormal returns to bidding company shareholders to be substantially lower than those obtained using either of the other models. Due to the parameter estimation problems,

it is believed that the index model provide the most appropriate benchmark against which to evaluate bidding company returns. For bidding companies, there was also a problem of significant negative abnormal returns being observed for the months following the bid announcement (post-announcement 'drift'). Potential causes for the drift include information release, inefficient markets and model misspecification. However, none of these factors appear to fully account for the drift, which cause still eludes us.

CHAPTER 7

ANALYSIS OF ABNORMAL RETURNS FOR SHAREHOLDERS OF LISTED UK COMPANIES TARGETED IN CROSS-BORDER AND DOMESTIC ACQUISITIONS

7.1. Summary

In acquisitions in the UK during the 1986-1991 period, shareholders of the 143 listed UK companies targeted in cross-border acquisitions and shareholders of the 568 target companies in domestic UK acquisitions, on average, suffered negative abnormal returns during the early pre-bid period (from t-8 to t-3, where t refers to the bid announcement month). Over the following four month period (t-2, t+1), however, large positive abnormal returns were, on average, earned by shareholders of both categories of target companies.

For shareholders of target companies in cross-border acquisitions, total event window (t-8, t+1) cumulative abnormal returns (CAR) amounted to +20.21% with the index model (IM), +25.27% with the capital asset pricing model (CAPM), and +26.98% for the market model (MM), all significant at the 99% level. For target company shareholders in domestic acquisitions, the corresponding figures were +17.71% (IM), +19.12% (CAPM), and +16.66% (MM), all significant at the 99% level.

The additional cumulative abnormal returns in cross-border as compared to domestic acquisitions for the whole event window (from t-8 to t+1) amounted to +2.50 percentage points for the IM, +6.15 percentage points for the CAPM, and +10.31 percentage points for the MM. These differences, while indicating a positive target company cross-border effect, were not statistically significant, except for those of the market model. However, looking at the more narrow period from t-2 to t+1 months, target company shareholders in cross-border acquisitions gained significantly more than targets in domestic acquisitions. There is thus evidence of a positive target

company cross-border effect to have been present in the UK over the 1986-1991 period.

Further analysis established that target companies in cross-border acquisitions obtained significantly higher CARs where the acquiring companies were based outside the European Community compared to where the acquirer was based within the EC.

Cross-sectional analysis revealed that target company shareholders obtained significantly higher CARs in bids where a full cash alternative was offered, compared to security exchange offers. The percentage abnormal return was also found to be related to company size, with the percentage cumulative abnormal returns to target company shareholders being higher for targets with low pre-bid market value. Target companies in domestic acquisitions were also found to gain more in competitive bids, successful offers and (predominately during the pre-bid period) where the bidding company held a stake in the target company prior to bid announcement.

7.2. Introduction

As was discussed in the literature review (Chapters 3 and 4), the existing literature has established that, regardless of which market or time period is being analysed, or what methodology is applied, target company shareholders, on average, earn large positive abnormal returns during the period leading up to an including the time of the bid announcement.

With regard to cross-border acquisitions, the existing literature, based predominately on the US market, generally conclude (as summarised in Table 4.2) that shareholders have gained more when the bidding company was based in a different country to that of the target, compared to when the bidder and target were domiciled in the same country. The additional abnormal returns to target company shareholders in cross-border acquisitions relative to domestic acquisitions, has become known as the target company 'cross-border effect'. This chapter sets out to analyse the abnormal returns to UK target companies in both cross-border and domestic

acquisitions, as well as to test whether a target company cross-border effect, similar to that observed in the existing literature with regard to the US market, was present in the UK during the 1986 to 1991 period. Cross-sectional analysis is also undertaken in an attempt to explain the variations in abnormal returns.

In section 7.3, the average abnormal returns (AR) and average cumulative abnormal returns (CAR) to UK target companies in cross-border acquisitions is analysed, while the analysis of target companies in domestic UK acquisitions is contained in section 7.4. A comparative analysis of the abnormal returns and a discussion of the UK cross-border effect is provided in section 7.5, while section 7.6. contains concluding remarks.

7.3. UK Target Companies in Cross-Border Acquisitions

7.3.1. Abnormal Returns to Target Companies in Cross-Border Acquisitions Into the UK

The average monthly abnormal and cumulative abnormal returns to the 143 UK target companies[156] in cross-border acquisitions into the UK over the 1986-1991 period, are given in Table 7.1. As can be seen from this table, on average, target companies, regardless of the choice of test model, underperformed during the period from eight to three months prior to the month of the bid announcement (t-8, t-3). Cumulative abnormal returns (CAR) during this period ranged from -6.60% with the market model, to -7.79% with CAPM and -10.88% with the index model, all significant at the 99% level.

It is difficult to directly attribute these large negative abnormal returns over the pre-bid period to the forthcoming bid announcements. A more plausible explanation for these results is that overseas bidding companies have targeted UK companies with a history of, at least short-term, poor share price performance.

In their exploratory analysis of cross-border acquisitions by 7 large UK companies,

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156 As discussed in chapter 5, due to data limitations, sample sizes were smaller for CAPM, MM, and for month t+1.

Harris and Nicholls (1988) argued that "there seems little willingness to make acquisitions of badly managed companies and create a 'turnaround'. Most ... expected their acquisitions to be well managed...". (p. 103). One could therefore hypothesise

Table 7.1

Average Abnormal Returns to Target Companies in Cross-Border Acquisitions into the United Kingdom (1986 - 1991)

Average abnormal returns (AR) and cumulative abnormal returns (CAR) to shareholders of UK target companies which received takeover bids from overseas companies (1986-1991). The AR/CAR has been estimated using the market model (MM), the index model (IM), and the capital asset pricing model (CAPM) specified as follows:

IM: $\log_e R_i = \log_e R_m + \mu_i$
CAPM: $\log_e R_i = \log_e R_f + \beta_i(\log_e R_m - \log_e R_f) + \mu_i$
MM: $\log_e R_i = \alpha_i + \beta_i \log_e R_m + \mu_i$

where $\log_e$ is the natural log, R_i is the return on the share, R_m the return on the market, R_f the risk-free interest rate (approximated by using a short-term government bond) α_i and β_i regression coefficients, and μ_i the estimated abnormal return during time period i. Time periods refer to months relative to the month of the bid announcement, which is denoted t.

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8	-0.0281**** (-2.78)	-0.0342**** (-3.24)	-0.0305**** (-2.77)
t-7	-0.0145* (-1.62)	-0.0091 (-0.91)	-0.0067 (-0.95)
t-6	-0.0043 (-0.45)	0.0039 (0.38)	0.0034 (0.22)
t-5	-0.0170** (1.87)	-0.0055 (-0.60)	-0.0052 (-0.77)
t-4	-0.0286**** (-2.78)	-0.0217*** (-2.10)	-0.0182* (-1.48)
t-3	-0.0164* (-1.58)	-0.0114 (-1.09)	-0.0089 (-1.25)
t-2	0.0330*** (2.42)	0.0288** (1.91)	0.0323**** (3.97)
t-1	0.0655**** (4.32)	0.0705**** (4.39)	0.0739**** (8.51)
t	0.1848**** (6.69)	0.1901**** (5.92)	0.1995**** (21.38)
t+1	0.0368**** (2.87)	0.0422**** (2.77)	0.0299* (1.55)

Table 7.1 (Continued)

Average Cumulative Abnormal Returns

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8, t-7	-0.0426**** (-3.46)	-0.0432**** (-3.57)	-0.0372*** (-2.65)
t-8, t-6	-0.0469**** -2.75)	-0.0393*** (-2.17)	-0.0337*** (-2.02)
t-8, t-5	-0.0638**** (-3.14)	-0.0448*** (-2.05)	-0.0389*** (-2.14)
t-8, t-4	-0.0924**** (-3.87)	-0.0665**** (-2.69)	-0.0570**** (-2.57)
t-8, t-3	-0.1088**** (-3.76)	-0.0779**** (-2.65)	-0.0660**** (-2.86)
t-8, t-2	-0.0758*** (-2.33)	-0.0491* (-1.44)	-0.0337 (-1.14)
t-8, t-1	-0.0103 (-0.28)	0.0214 (0.55)	0.0403** (1.94)
t-8, t	0.1745**** (4.03)	0.2115**** (4.27)	0.2398**** (8.95)
t-8, t+1(†)	0.2021**** (4.31)	0.2527**** (4.57)	0.2698**** (8.57)

t-statistics (Patell z-scores for the market model) are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively. Following Strong (1992) and Kumar, Sen and Shome (1992), the Patell Standardised Residual (PSR) Test (Patell (1976)) has been applied for the MM. The simple t-test (Strong (1992), pp. 544-545) has been applied for the IM and CAPM.

† As explained in Chapter 6, not all target companies remained listed during the month following the bid announcement. Consequently, abnormal returns could not be calculated for all companies during month t+1. The presence of missing values causes difficulties when calculating average cumulative abnormal returns for time period (t-8, t+1). Three different approaches can be adopted:

a) Calculate the sum of the average abnormal returns for each time period during the event window:

$$CAR\ (t\text{-}8,\ t\text{+}1) = \sum_{t-8}^{t+1} AR_t$$

A major limitation of this approach is that there appears to be no available method for calculating the level of statistical significance of these average cumulative abnormal returns.

b) A second approach is to calculate the cumulative abnormal returns for each company over the time period t-8 to t+1, and then calculate the average of these cumulative abnormal returns:

$$CAR\ (t\text{-}8,\ t\text{+}1) = \frac{\sum_{i=1}^{N}\sum_{t-8}^{t+1} ar_{it}}{N}$$

However, further problems are encountered when operationalising this approach in the presence of missing values, giving rise to two possibilities:

i. Calculate the cumulative abnormal returns for each company on the data available. Thus, while for the majority of companies the cumulative abnormal returns would be based on data for (t-8,t+1), for some the cumulation period would be (t-8, t). In effect, this approach assumes the missing values to be 0. Such an assumption may not be valid, rendering this approach questionable.

ii. An alternative is to exclude from the analysis companies where missing values are present. Consequently, cumulative abnormal returns for time periods including t+1 will only be calculated for companies where abnormal return estimates were available for this month.

The last approach has been adopted in this thesis. This method avoids making assumptions regarding the missing values. A potential limitation of this approach is that it reduces the sample size. However, as the target company sample sizes are relatively large (and there are few missing values during time period t+1), this is believed to not be a major problem for this study.

Finally, it is worth noting that the three different approaches of calculating the cumulative abnormal returns produce very similar results with regard to the (t-8, t+1) CAR:

		IM	CAPM	MM
Approach	a)	0.2113	0.2537	0.2697
	b) i.	0.2070	0.2487	0.2662
	ii.	0.2021	0.2527	0.2698

Where no missing values are present (such as for the bidding companies discussed in Chapter 8), the three approaches to calculating cumulative abnormal returns will produce identical results.

that overseas bidding companies would tend to target relatively well performing UK companies. However, on the basis of the pre-bid share performance of the target companies, the evidence in this study does not support such a hypothesis.

While the largest positive abnormal returns were observed in the month of the bid announcements, large and highly significant positive abnormal returns were also observed during the two months prior to the bid announcement month. These large pre-bid abnormal returns highlights the potential limitation of several previous studies (such as e.g., Tessema (1985), Biswas (1990), Feils (1993), and Eun *et al.* (1995)) which applied short event windows to the analysis of abnormal returns to target companies in cross-border acquisitions. Further research would be required to establish the cause of these large positive pre-bid abnormal returns. Possible explanations include stake-building in the target companies by the bidding companies[157], bid speculation/bid rumours, and insider trading. Regardless of the cause of the pre-bid CAR, studies using short event windows (such as the four studies mentioned above, which all applied 11 day event windows) are unlikely to capture the

157 This issue is developed further in the cross-sectional analysis in section 6.3.3.

full shareholder wealth effect of cross-border acquisitions.

Over the four month period from t-2 to t+1, the average CAR to UK target companies in cross-border acquisitions amounted to +32.01% with the index model, +33.16% with the CAPM, and +33.56% with the market model, all highly statistically significant. Thus, over the 1986 to 1991 period, shareholders of UK listed companies experienced large positive abnormal returns when their companies were bid for by overseas companies. Taking into consideration the poor performance of the target companies over the first six months of the event window, total abnormal returns over the ten month period from t-8 to t+1 were still highly significant, ranging between +20.21% and +26.98% depending on the test model applied. The cumulative abnormal returns are depicted in Figure 7.1.

7.3.2. National Variations

As indicated in Table 6.2 in the previous chapter, the cross-border takeover bids for UK listed companies over the 1986-1991 period were undertaken by foreign entities based in 27 different countries. While data was available for UK companies targeted by companies based in 22 countries, the number of observations for several countries was too small for any meaningful analysis. Consequently, the observations have been classified into 4 distinct groups depending on the domicile of the overseas bidding company:

a) Companies based in the EC[158] (43 observations[159]).

As bidding companies based in the EC are already within the Single Market, one may hypothesise that such bidders may not be prepared to pay as high a premium for market entry as companies based outside the Community.

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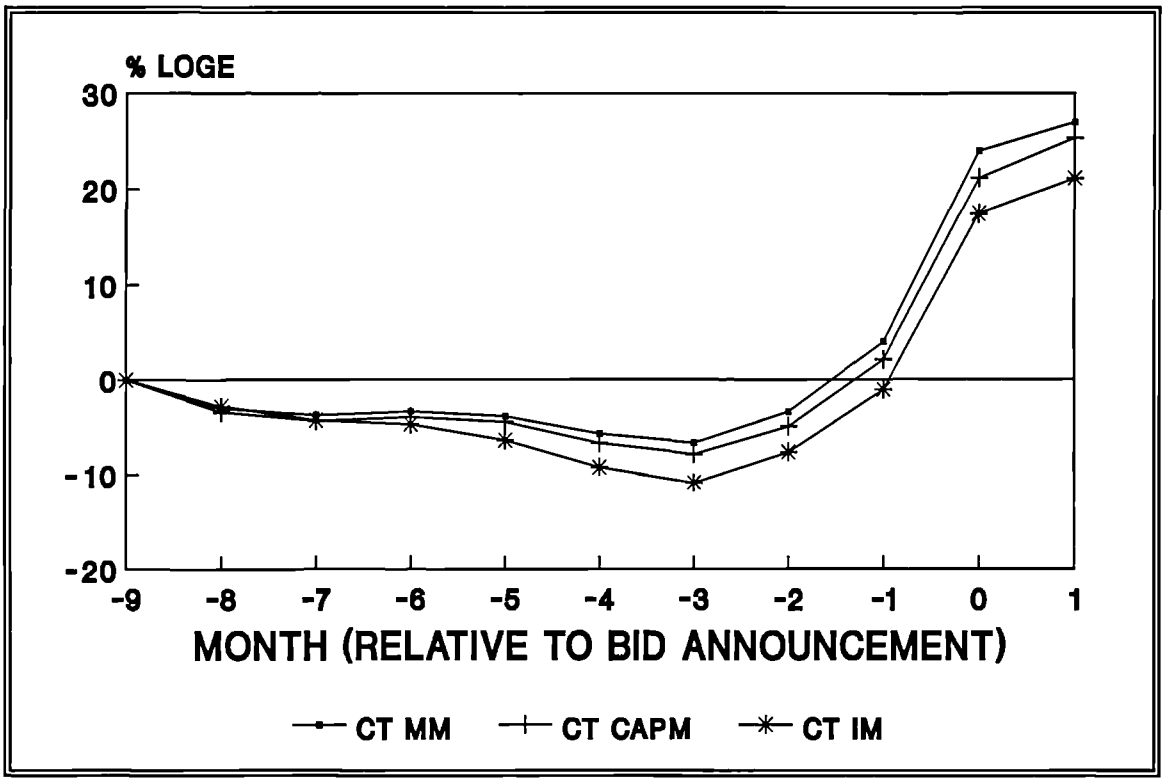
158 The classification of countries between EC and non-EC members relates to the 12 EC member countries as of 1991. Sweden, Finland and Austria have later joined the EU, but were not members of the community at the time of the cross-border takeover bids. Consequently, in this study, companies from these countries have in this study been classified as being based in non-EC member states.

159 Due to data limitations during month t+1, CAR (t-8, t+1) was based on 34 observations for the EU, 30 Non-EU, 26 US, and 36 rest of the world.

Figure 7.1.

Average Cumulative Abnormal Returns to Target Companies in Cross-Border Acquisitions into the United Kingdom (1986 - 1991)

Average cumulative abnormal returns (CAR) to listed UK target companies who received takeover bids from overseas companies (1986-1991). For information on model specifications, see Table 7.1.



b) Companies based in non-EC European countries (33 observations).

As indicated in Chapter 6, non-EC continental bidders (in particular from Sweden and Switzerland) were active buyers of UK companies during the 1986-1991 period. For companies based in these relatively small countries, access to the Single Market may have been a primary motive for the acquisitions of UK firms. If so, it may be hypothesised that UK target company shareholders will experience higher abnormal returns in such transactions than in intra-EC acquisitions.

c) Companies based in the US (31 observations).

Companies based in the US are exposed to a highly competitive home takeover market. One would therefore expect (although data was not

available to test this) US bidders to have more takeover experience than companies based in e.g., Continental Europe. One may therefore hypothesise that US bidders will obtain higher abnormal returns than bidders based in other countries. With regard to UK target company shareholders, it may be that US bidders, due to their experience, will be able to identify UK targets where it is not necessary to pay high takeover premiums. Based on an assumption of the UK takeover market being less efficient than the US one, Conn and Connell (1990) argued that returns to US bidders would be high and returns to UK targets low in cross-border acquisitions into the UK by US bidders.

d) Companies based in the rest of the world (36 observations).

This diverse category of bids includes cross-border acquisitions by companies based outside Europe or the US.

The average index model cumulative abnormal returns to the various sub-groups of UK target companies in cross-border acquisitions, are given in Table 7.2. The second part of the table contains an analysis of the differences in mean CARs for the various groups.

The results in Table 7.2 indicates that the level of abnormal returns to UK target companies subject to cross-border acquisitions varied significantly depending on the nationality of the overseas bidding companies. Looking at the total analysis period (t-8, t+1), UK target companies gained less from acquisitions in which the bidding company was based within the EC, compared to acquisitions by companies based outside the union. The large differences in cumulative abnormal returns, ranging between +17.28% and +25.40%, were statistically significant, although generally only at the 80% level of significance.

One possible explanation for these results could be that companies based outside the EC were prepared to pay higher takeover premiums for their UK targets in order

Table 7.2.

Average Index Model Cumulative Abnormal Returns to Target Companies in Cross-Border Acquisitions into the United Kingdom by Nationality of the Bidding Company (1986 - 1991)

For information on model specification, see Table 7.1. The second part of the table contains an analysis of the differences in mean cumulative abnormal returns. Cell reference = column heading less row heading. Thus, the first cell (-0.1728) refers to CAR of UK target companies bid for by companies based in the EC, less CAR to UK target companies bid for by companies based in non-EC member countries.

Event window	All	EC	Non-EC European	US	Rest of the world
(t-8, t+1)	0.2021**** (4.31)	0.0506 (0.48)	0.2233**** (3.54)	0.2339**** (3.64)	0.3046**** (2.89)
(t-8, t-2)	-0.0758*** (-2.33)	-0.1245*** (-2.10)	-0.0649 (-0.99)	-0.015 (-0.21)	-0.0805 (-1.16)
(t-1, t)	0.2504**** (8.22)	0.2107**** (3.13)	0.2551**** (5.57)	0.2375**** (5.74)	0.3045**** (4.28)

	Event window	EC	Non-EC European	US
Non-EC European	(t-8, t+1)	-0.1728* (-1.40)		
	(t-8, t-2)	-0.0596 (-0.69)		
	(t-1, t)	-0.0444 (-0.55)		
US	(t-8, t+1)	-0.1833* (-1.48)	-0.0105 (-0.12)	
	(t-8, t-2)	-0.1099 (-1.23)	-0.0503 (-0.53)	
	(t-1, t)	-0.0268 (-0.34)	0.0176 (0.29)	
Rest of the world	(t-8, t+1)	-0.2540** (-1.70)	-0.0813 (-0.66)	-0.0707 (-0.57)
	(t-8, t-2)	-0.0439 (-0.49)	0.0156 (0.16)	-0.0660 (0.67)
	(t-1, t)	-0.0938 (-0.96)	-0.0494 (-0.58)	-0.0670 (-0.81)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis or cumulative abnormal returns (or differences in cumulative abnormal returns) equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively.

to gain access to the European Single Market. This would be consistent with a 'market entry hypothesis'. It is worth noting, however, that a large proportion of the difference in cumulative abnormal returns to UK target companies subject to acquisitions by companies based within or outside the EC, took place over the period *prior* to the bid announcement (t-8, t-2). Indeed, underperformance during the pre-event period was only significant for UK target companies subject to EC bidders. It may thus be the case that, for some as yet unknown reason, EC-based bidders had a stronger tendency than other cross-border predators to target poorly performing UK companies.

7.3.3. Cross-Sectional Analysis of Cumulative Abnormal Returns to Target Companies in Cross-Border Acquisitions Into the UK

In this section, cross-sectional analysis of the index model cumulative abnormal returns to target companies in cross-border acquisitions is undertaken, in an attempt to explain the variation in abnormal returns to the different companies in the sample.

As explained in the previous section, shareholders of UK companies targeted in cross-border acquisitions, on average, experienced total cumulative abnormal returns (applying the index model) of +20.21% over the time period t-8 to t+1. The regression output from the cross-sectional analysis is summarised in Table 7.3. As can be clearly seen from these regressions, method of payment proved to be the only significant explanatory variable. The results indicate that the positive cumulative abnormal returns were confined to offers in which there was a full cash alternative. Although the effect of payment is statistically significant, the explanatory power of the regressions is relatively low (maximum adjusted R^2 of 4.6%). It is also worth bearing in mind that the sample includes only 5 observations in which there was not a full cash alternative. The size of the payment effect should therefore be interpreted with care.

The outcome of the bid does not appear to have had a significant impact on the level of abnormal returns to target company shareholders subject to cross-border takeover bids, at least not as captured by the t-8, t+1 cumulative abnormal returns.

Table 7.3.

Cross-Sectional Analysis of the Total Analysis Period (t-8, t+1) Index Model Cumulative Abnormal Returns to UK Target Companies in Cross-Border Acquisitions (Cross-Border Targets) (1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.200*** (3.70)	0.189*** (3.53)	0.190*** (3.70)	-0.124 (-0.53)	0.181*** (2.90)	0.267*** (4.15)	0.176* (1.48)	0.186*** (3.21)	0.165** (2.32)	-0.132 (-0.55)	-0.124 (-0.52)	0.204 (1.12)	-0.619* (-1.35)
Outcome	0.007 (0.06)							-0.027 (-0.21)	-0.043 (-0.33)	0.019 (0.17)			-0.039 (-0.22)
Competitive		0.058 (0.51)						0.055 (0.41)	0.090 (0.68)		0.041 (0.34)		0.181 (1.03)
Revised			0.074 (0.58)					0.061 (0.45)					0.072 (0.34)
Pay				0.340* (1.41)						0.343* (1.42)	0.330* (1.36)		0.868** (2.02)
Stake					0.048 (0.51)				0.064 (0.65)				-0.166 (-1.22)
Rel Size						-0.0005 (-0.77)						-0.0005 (-0.76)	0.0009 (0.86)
Size							0.010 (0.33)					0.015 (0.37)	0.016 (0.38)
Obs	126	126	126	126	126	45	123	126	126	126	126	45	45
Adj R^2	0 0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	4.6%
F-value (*p*-value)	0.00 (0.949)	0.26 (0.609)	0.33 (0.566)	2.00* (0.160)	0.26 (0.613)	0.59 (0.447)	0.11 (0.743)	0.17 (0.919)	0.24 (0.870)	1.01 (0.369)	1.06 (0.351)	0.36 (0.702)	1.31 (0.275)

Table 7.3 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the average CAR to UK target companies subject to cross-border takeover bids. Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Outcome} + \beta_2 \text{Competitive} + \beta_3 \text{Revised} + \beta_4 \text{Pay} + \beta_5 \text{Stake} + \beta_6 \text{Rel Size} + \beta_7 \text{Size} + \epsilon_i$$

Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid market value of the target company, and ϵ is an error term.

Table 7.4.

Cross-Sectional Analysis of the Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to UK Target Companies in Cross-Border Acquisitions (Cross-Border Targets) (1986-1991)

Variables as defined in Table 7.3.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.077*** (-2.09)	-0.077*** (-2.11)	-0.089*** (-2.51)	-0.228* (-1.31)	-0.087*** (-2.02)	0.031 (0.58)	-0.230**** (-2.87)	-0.087*** (-2.20)	-0.091** (-1.86)	-0.233* (-1.31)	-0.228* (-1.30)	-0.098 (-0.68)	-0.523 (-1.22)
Outcome	0.007 (0.09)							0.000 (0.00)	-0.004 (-0.04)	0.013 (0.16)			-0.126 (-0.76)
Competitive		0.008 (0.10)						-0.016 (-0.17)	0.016 (0.16)		0.001 (0.01)		0.111 (0.69)
Revised			0.084 (0.94)					0.089 (0.95)					0.107 (0.59)
Pay				0.158 (0.89)						0.160 (0.89)	0.158 (0.88)		0.459 (1.14)
Stake					0.027 (0.41)				0.029 (0.43)				-0.124 (-1.07)
Rel Size						-0.0003 (-0.43)						-0.0003 (-0.44)	0.0006 (0.62)
Size							0.043*** (2.13)					0.033 (0.95)	0.036 (0.97)
Obs	143	143	143	143	143	55	139	143	143	143	143	55	55
Adj R^2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
F-value (*p*-value)	0.01 (0.931)	0.01 (0.921)	0.89 (0.348)	0.79 (0.379)	0.17 (0.684)	0.18 (0.672)	4.55*** (0.035)	0.30 (0.823)	0.06 (0.979)	0.40 (0.668)	0.39 (0.677)	0.54 (0.583)	0.79 (0.602)

Table 7.5.

Cross-Sectional Analysis of the Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to UK Target Companies in Cross-Border Acquisitions (Cross-Border Targets) (1986-1991)

Variables as defined in Table 7.3.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.250**** (7.21)	0.246**** (7.17)	0.260**** (7.76)	0.174 (1.06)	0.245**** (6.06)	0.238**** (8.22)	0.351**** (4.46)	0.255**** (6.89)	0.240**** (5.27)	0.173 (1.03)	0.174 (1.06)	0.339**** (4.33)	-0.041 (-0.18)
Outcome	0.001 (0.01)							-0.008 (-0.09)	-0.016 (-0.18)	0.004 (0.05)			0.060 (0.69)
Competitive		0.020 (0.26)						0.043 (0.47)	0.031 (0.34)		0.016 (0.21)		0.093 (1.09)
Revised			0.46 (0.497)					-0.069 (-0.79)					-0.028 (-0.29)
Pay				0.079 (0.47)						0.080 (0.47)	0.076 (0.45)		0.387** (1.81)
Stake					0.012 (0.19)				0.017 (0.26)				-0.012 (-0.20)
Rel Size						-0.0001 (-0.32)						-0.0001 (-0.29)	0.0004 (0.90)
Size							-0.027* (-1.37)					-0.025* (-1.38)	-0.030* (-1.53)
Obs	143	143	143	143	143	55	139	143	143	143	143	55	55
Adj R^2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%
F-value (*p*-value)	0.00 (0.989)	0.07 (0.796)	0.46 (0.497)	0.22 (0.637)	0.04 (0.850)	0.10 (0.753)	1.87* (0.174)	0.23 (0.873)	0.05 (0.985)	0.11 (0.893)	0.13 (0.875)	1.01 (0.373)	1.22 (0.310)

As one would expect, target company shareholders gained more in competitive than in single-bidder acquisitions and in bids that were revised, although neither of the variables were statistically significant. Contrary to the expectations of the size effect hypothesis, large targets were found to have gained marginally more than smaller ones. The effect of pre-bid stakes and the relative size of the target and bidding companies were found to be small, and the signs varied between the different regressions. It thus appear that the presence or otherwise of pre-bid stakes and the relative size of the companies had only insignificant impact on the level of abnormal returns (t-8, t+1) to shareholders of listed UK companies bid for by overseas bidders.

Tables 7.4 and 7.5 breaks down the cross-sectional analysis of the cumulative abnormal returns into two sub-sections, Table 7.4 looking at the pre-bid period (t-8, t-2), and Table 7.5 the bid period (t-1, t).

As highlighted in Figure 7.1, shareholders of target companies in cross-border acquisitions earned, on average, negative abnormal returns over the period prior to the announcement of the takeover bids. None of the explanatory variables were generally successful in explaining a significant portion of the cross-sectional variation in abnormal returns during this pre-bid period (Table 7.4). The regression results indicate that large companies performed better than smaller ones, although the size variable was no longer significant once other explanatory variables were included in the analysis.

While large companies performed better than smaller ones during the pre-bid period, small targets outperformed larger companies during the period of the bid announcement (although significant only at the 80% level), as reported in Table 7.5. Thus, over the total analysis period, the pre-bid market value of target companies did not have a significant impact on the level of abnormal returns.

The effect of the method of payment was not statistically significant during the event period (t-1, t) when analysed in isolation, but was significant when all variables

were included in the cross-sectional analysis[160].

7.4. UK Target Companies in Domestic UK Acquisitions

7.4.1. Abnormal Returns to Target Companies in Domestic UK Acquisitions

The average monthly abnormal and cumulative abnormal returns to 568 listed UK companies[161] targeted in domestic acquisitions during the 1986-1991 period, are provided in Table 7.6.

As was the case with the target companies in cross-border acquisitions (as discussed above), target companies in domestic acquisitions substantially underperformed (relative to both the market and to their market-adjusted performance during the previous five years) during the period prior to the bid announcement. For all three test models, negative abnormal returns were observed for every month up to and including month t-3.

The end of the downward trend in share performance appears to have occurred two months before the month of the bid announcement. In this month, target companies experienced relatively small (although significant with the market model) positive abnormal returns. The abnormal returns during month t-1 were in excess of 3% with all three test models (significant at the 99% level), while the gains during the bid announcement month were approximately 19% (also significant at the 99% level).

The cumulative abnormal returns are contained in the second half of Table 7.6, and are depicted in Figure 7.2. The graph confirms that target companies in domestic UK acquisitions, on average, underperformed up until t-3, while earning large positive abnormal returns during months t-1 and t. During these two months, cumulative abnormal returns ranged between +22.12% and +23.12%, depending on test model applied.

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160 It is worth noting that, as specified in Table 6.4, less than 5% of the cross-border bids did not include a full cash alternative.

161 Sample size relates to the index model. As explained in Chapter 6, sample sizes were smaller for CAPM, the market model, and for month t+1.

Taking into account the poor performance over the period prior to the bid, total cumulative abnormal returns over the total analysis period (t-8, t+1), amounted to +17.71% for the index model, +19.12% for the capital asset pricing model, and +16.66% for the market model, all significant at the 99% level. While there are some differences in the levels of abnormal returns between the different test models, these differences are relatively small. All three models indicates that shareholders of UK companies targeted in domestic acquisitions during the 1986 to 1991 period gained significantly during the period surrounding these bid announcements.

Table 7.6.

Average Abnormal Returns to Target Companies in Domestic Acquisitions in the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1.

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8	-0.0155**** (-3.18)	-0.0157**** (-2.86)	-0.0184**** (-3.59)
t-7	-0.0098** (-1.86)	-0.0048 (-0.87)	-0.0073 (-0.96)
t-6	-0.0062* (-1.28)	-0.0068 (-1.25)	-0.0091** (-1.75)
t-5	-0.0059 (-1.14)	-0.0022 (-0.39)	-0.0045 (-1.00)
t-4	-0.0075* (-1.58)	-0.0020 (-0.37)	-0.0044 (-0.39)
t-3	-0.0148*** (-2.51)	-0.0169**** (-2.59)	-0.0189**** (-3.26)
t-2	0.0035 (0.56)	0.0083 (1.17)	0.0062** (1.76)
t-1	0.0335**** (4.87)	0.0390**** 5.06)	0.0369**** (9.87)
t	0.1877**** (20.06)	0.1923**** (17.92)	0.1902**** (43.38)
t+1	0.0012 (0.27)	-0.0004 (-0.07)	-0.0029 (-1.08)

Table 7.6 (Continued).

Average Cumulative Abnormal Returns

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8, t-7	-0.0253**** (-3.55)	-0.0205**** (-2.75)	-0.0256**** (-3.24)
t-8, t-6	-0.0315**** (-3.62)	-0.0273**** (-2.87)	-0.0347**** (-3.64)
t-8, t-5	-0.0374**** (-3.76)	-0.0295**** (-2.77)	-0.0392**** (3.65)
t-8, t-4	-0.0449**** (-3.98)	-0.0314*** (-2.51)	-0.0436**** (-3.44)
t-8, t-3	-0.0596**** (-3.36)	-0.0483**** (-3.20)	-0.0625**** (-4.47)
t-8, t-2	-0.0562**** (-3.47)	-0.0400*** (-2.21)	-0.0563**** (-3.48)
t-8, t-1	-0.0226* (-1.29)	-0.0010 (-0.05)	-0.0194 (0.24)
t-8, t	0.1651**** (8.28)	0.1914**** (8.54)	0.1708**** (14.68)
t-8, t+1	0.1771**** (8.64)	0.1912**** (8.00)	0.1666**** (13.38)

t-statistics (Patell z-scores for the market model) are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively. Following Strong (1992) and Kumar, Sen and Shome (1992), the Patell Standardised Residual (PSR) Test (Patell (1976)) has been applied for the MM. The simple t-test (Strong (1992), pp. 544-545) has been applied for the IM and CAPM.

7.4.2. Cross-Sectional Analysis of Cumulative Abnormal Returns to Target Companies in Domestic UK Acquisitions

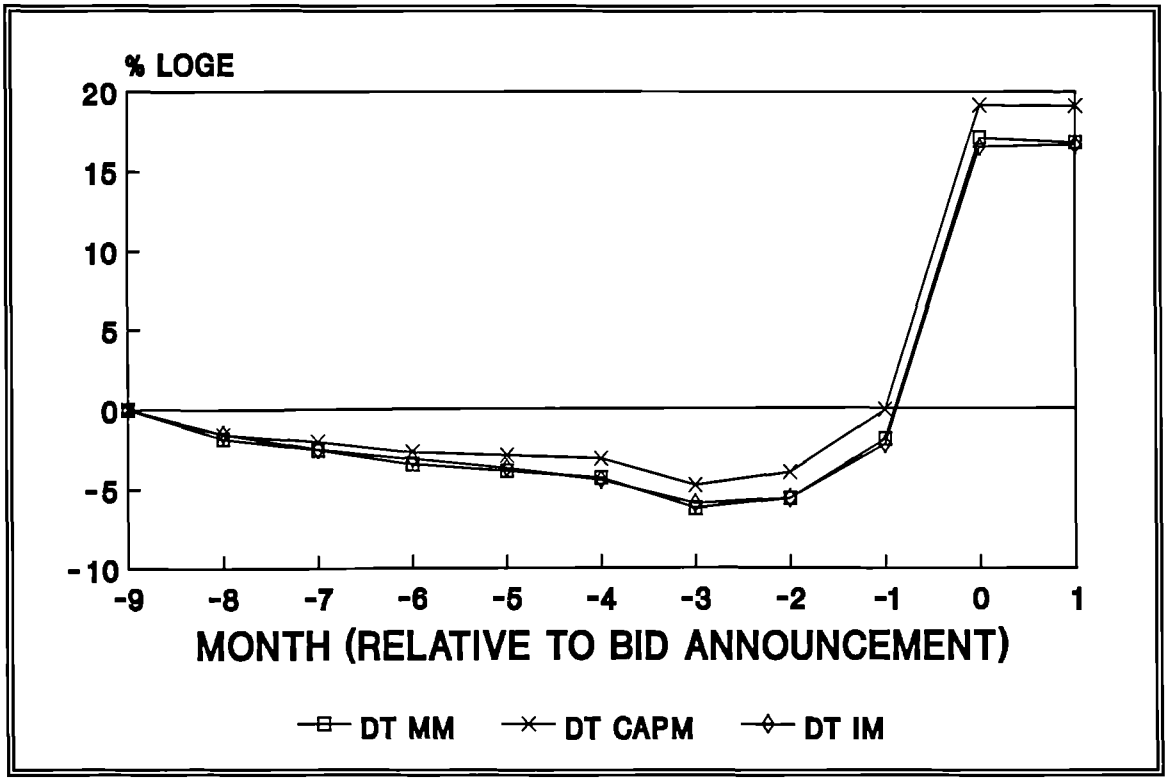
Over the total analysis period (t-8, t+1), target companies in domestic UK acquisitions earned cumulative abnormal returns, using the index model, of +17.71%. The cross-sectional analysis of these abnormal returns is contained in Table 7.7. Although these regressions are unable to explain a large proportion of the cross-sectional variation in abnormal returns (maximum adjusted R^2 of 4.3%), a number of variables were found to be highly statistically significant.

As was the case with cross-border acquisitions, target company shareholders in domestic UK acquisitions obtained significantly higher abnormal returns from offers

Figure 7.2.

Average Cumulative Abnormal Returns to Target Companies in Domestic Acquisitions in the United Kingdom (1986 - 1991)

Average cumulative abnormal returns (CAR) to listed UK target companies who received takeover bids from overseas companies (1986-1991). For information on model specifications, see Table 7.1.



which included a full cash alternative. These results lend support to the previous literature (such as Halpern (1973), Wansley *et al.* (1983), Franks *et al.* (1988), Eckbo and Langohr (1989), Biswas (1990), Harris and Ravenscraft (1991) and Kaplan and Weisback (1992)), which found the levels of abnormal returns to vary significantly dependent on the method of payment. It should be noted, however, that the data for this study did not distinguish between cases where cash only was offered and cases where shareholders were given a choice between cash and equity. Consequently, while the results of this study confirms that target company shareholders obtained larger gains where a full cash alternative was available, these results may not be directly comparable to some of the previous literature, particularly the ones concerning

Table 7.7.

Cross-Sectional Analysis of the Total Analysis Period (t-8, t+1) Index Model Cumulative Abnormal Returns to UK Target Companies in Domestic Acquisitions (Domestic Targets) (1986-1991)

Please see the following page for an explanation of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.179**** (7.81)	0.156**** (7.12)	0.167**** (7.61)	0.062** (1.82)	0.161**** (6.88)	0.187**** (8.14)	0.278**** (5.85)	0.162**** (6.75)	0.150**** (5.76)	0.060** (1.65)	0.044 (1.28)	0.267**** (4.86)	0.196**** (3.11)
Outcome	-0.012 (-0.23)							-0.076* (-1.38)	-0.073* (-1.33)	0.008 (0.16)			-0.123*** (-2.05)
Competitive		0.158**** (2.64)						0.185**** (2.78)	0.195**** (2.99)		0.151*** (2.55)		0.235**** (3.29)
Revised			0.074 (1.21)					0.043 (0.69)					0.037 (0.58)
Pay				0.178**** (4.21)						0.178**** (4.20)	0.175**** (4.15)		0.109*** (2.32)
Stake					0.065* (1.35)				0.067* (1.40)				0.007 (0.13)
Rel Size						-0.0024 (-0.84)						-0.0017 (-0.56)	-0.0000 (-0.01)
Size							-0.030*** (-2.56)					-0.024* (-1.60)	-0.029** (-1.84)
Obs	550	550	550	550	550	344	546	550	550	550	550	344	344
Adj R^2	0.0%	1.1%	0.1%	2.9%	0.1%	0.0%	0.8%	1.1%	1.4%	2.8%	3.9%	0.4%	4.3%
F-value (*p*-value)	0.05 (0.821)	6.95**** (0.009)	1.46 (0.227)	17.69**** (0.000)	1.82* (0.178)	0.70 (0.403)	5.12*** (0.024)	3.10*** (0.026)	3.60*** (0.013)	8.84**** (0.000)	12.17**** (0.000)	1.63* (0.198)	3.23**** (0.003)

Table 7.7 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the average CAR to UK target companies subject to takeover bids from other UK companies. Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Outcome} + \beta_2 \text{Competitive} + \beta_3 \text{Revised} + \beta_4 \text{Pay} + \beta_5 \text{Stake} + \beta_6 \text{Rel Size} + \beta_7 \text{Size} + \epsilon_i$$

Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid market value of the target company, and ϵ is an error term.

Table 7.8.

Cross-Sectional Analysis of the Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to UK Target Companies in Domestic Acquisitions (Domestic Targets) (1986-1991)

Variables as defined in Table 7.7.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.061*** (-3.34)	-0.070*** (-4.02)	-0.058*** (-3.32)	-0.18*** (-3.97)	-0.076*** (-4.12)	-0.006*** (-3.24)	-0.010 (-0.26)	-0.067*** (-3.50)	-0.090*** (-4.33)	-0.116*** (-3.99)	-0.120*** (-4.31)	-0.033 (-0.71)	-0.067 (-1.21)
Outcome	0.022 (0.54)							-0.014 (-0.31)	-0.010 (-0.24)	0.031 (0.77)			-0.051 (-0.97)
Competitive		0.102** (2.14)						0.110** (2.09)	0.110** (2.15)		0.097** (2.06)		0.138** (2.22)
Revised			0.012 (0.25)					-0.008 (-0.17)					-0.007 (-0.13)
Pay				0.080** (2.37)						0.083** (2.43)	0.077** (2.29)		0.041 (0.99)
Stake					0.084** (2.22)				0.087** (2.30)				0.049 (1.07)
Rel Size						-0.0004 (-0.17)						-0.0001 (-0.05)	0.0007 (0.27)
Size							-0.014* (-1.29)					-0.010 (-0.73)	-0.014 (-1.03)
Obs	568	568	568	568	568	357	564	568	568	568	568	357	357
Adj R^2	0.0%	0.6%	0.0%	0.8%	0.7%	0.0%	0.1%	0.3%	1.2%	0.7%	1.4%	0.0%	0.3%
F-value (*p*-value)	0.30 (0.587)	4.59** (0.033)	0.06 (0.803)	5.61** (0.018)	4.92** (0.027)	0.03 (0.865)	1.66* (0.198)	1.57* (0.196)	3.15** (0.019)	3.10** (0.046)	4.94** (0.007)	0.28 (0.754)	1.14 (0.337)

Table 7.9.

Cross-Sectional Analysis of the Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to UK Target Companies in Domestic Acquisitions (Domestic Targets) (1986-1991)

Variables as defined in Table 7.7.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.221*** (18.53)	0.216*** (18.90)	0.214*** (18.78)	0.154*** (8.75)	0.224*** (18.34)	0.238*** (18.64)	0.237*** (9.60)	0.213*** (16.96)	0.220*** (16.12)	0.151*** (8.02)	0.150*** (8.36)	0.247*** (8.16)	0.184*** (5.28)
Outcome	0.001 (0.02)							-0.016 (-0.57)	-0.016 (-0.54)	0.012 (0.47)			-0.029 (-0.87)
Competitive		0.041* (1.31)						0.039 (1.12)	0.048* (1.40)		0.035 (1.15)		0.048 (1.22)
Revised			0.055** (1.76)					0.049* (1.54)					0.044 (1.22)
Pay				0.103*** (4.70)						0.104*** (4.72)	0.102*** (4.65)		0.099*** (3.76)
Stake					-0.010 (-0.38)				-0.009 (-0.35)				-0.040* (-1.39)
Rel Size						-0.0014 (-0.87)						-0.0014 (-0.81)	-0.0007 (-0.41)
Size							-0.005 (-0.71)					-0.003 (-0.30)	-0.002 (-0.24)
Obs	568	568	568	568	568	357	564	568	568	568	568	357	357
Adj R^2	0.0%	0.1%	0.4%	3.6%	0.0%	0.0%	0.0%	0.2%	0.0%	3.5%	3.6%	0.0%	3.8%
F-value (*p*-value)	0.00 (0.982)	1.71* (0.192)	3.08** (0.080)	22.07*** (0.000)	0.15 (0.701)	0.75 (0.386)	0.50 (0.481)	1.45 (0.227)	0.70 (0.551)	11.13*** (0.000)	11.70*** (0.000)	0.42 (0.657)	3.03*** (0.004)

the US market where there is usually a clearer distinction between cash and equity offers.

With regard to the method of payment, it is also interesting to note that, while the abnormal returns relating to the bid announcement were higher for companies in which shareholders received a full cash alternative, these companies also performed better than the other targets during the period *prior* to the bid announcement. (The cross-sectional analysis of the cumulative abnormal returns relating to the pre-offer period and to the bid period, are given in Tables 7.8 and 7.9 respectively). While e.g., tax theories may help explain why the (pre-tax) returns were higher in cash than in equity offers, it is not yet known why cash offers appears to be associated with companies which performed well during the period prior to the bid announcement.

Looking at the overall analysis period, abnormal returns were found to be significantly higher in successful than in failed bids (with most regressions, although the variable was not significant on its own). From Tables 7.8 and 7.9, it can further be observed that target company shareholders performed only insignificantly worse than targets in successful bids during the period prior to, and including, the month of the bid announcement. Consequently, from these data, bid failure does not appear to have been apparent at the time of the bid announcement. However, once the month *following* the bid announcement was included in the analysis, cumulative abnormal returns for target companies in failed bids were significantly lower than for targets in successful acquisitions.

Over the total analysis period, shareholders of target companies gained significantly more in competitive than in non-competitive offers. The additional abnormal returns in competitive bids were in excess of 15 percentage points. These results support earlier findings by e.g., Stulz *et al.* (1990), Kaplan and Weisback (1992), Song (1993) and Swenson (1993). However, breaking down the analysis into the pre-bid period and the offer period (as reported in Tables 7.8 and 7.9), indicates that, although bid competition had a positive impact on abnormal returns during the bid

period, the effect of this variable appears to have been stronger during the period *prior* to the bid announcement. While these results may appear surprising, there are a number of possible explanations for this finding. The most plausible explanation, however, relates to the research design. In this study, takeover bids by different bidding firms for the same target company have been treated as separate 'events'. Consequently, there is a possibility that the high pre-bid performance of target companies in competitive bids, was due to the announcement of another takeover bid for the target during the period prior to the announcement of the competitive bid. This could have inflated the share price of the target company prior to the announcement of the second (competitive) bid. Another possible, although less plausible explanation, is that the takeover bids became competitive *due* to the strong pre-bid performance of the companies targeted.

Target companies in which the bidding companies held a stake prior to the bid announcement, gained more than targets in which no stake was present[162]. Looking at the sub-periods, it is clear from Table 7.8 that this superior performance took place during the period *prior* to the bid[163]. This may be due to an increase in the demand for, and therefore the price of, target companies' shares caused by the build-up of the stake during the pre-bid period[164]. The accumulation of shares may also have fuelled takeover rumours.

Size appears to have had a negative effect on the abnormal returns to the target companies' shareholders, as smaller companies gained more than larger ones[165].

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162 This variable was not, however, significant once all variables were included in the regression analysis.

163 Indeed, target companies in which the bidder held a pre-bid stake, gained somewhat *less* from the bid announcement than did the other targets.

164 Further research would be required to establish the timing and impact on share returns of these stake accumulations.

165 The difference in cumulative abnormal returns to small and large targets *may* be an indication of size-related market anomaly (as discussed in Chapter 6) rather than a takeover effect. However, it is worth bearing in mind that for target companies in cross-border acquisitions (as discussed above), large companies outperformed smaller ones during the period prior to the bids, although, as for domestic targets, gained less (in percentage terms) than smaller targets at the time of the bid announcement. This seems to indicate that the impact of size (as observed in the cross-sectional analyses) was, at least partially, associated with the takeover bids, rather than purely an artifact of any market-wide size related anomaly.

Target company shareholders gained more during the bid period (t-1, t) if the terms of the offer were improved. As the bid revision resulted in additional abnormal returns, this seems to indicate that the bids were revised not due to the original bids being particularly low, but due to other factors[166].

7.5. Comparative Analysis of UK Target Companies in Cross-Border and Domestic Acquisitions

7.5.1. Differential Abnormal Returns to Target Company Shareholders in Cross-Border and Domestic Acquisitions (Target Company 'Cross-Border Effect').

In this section, the differences in average abnormal and cumulative abnormal returns to UK target company shareholders in 143 cross-border and 568 domestic acquisitions is analysed. The differences in average abnormal and cumulative abnormal returns, also known as the target company 'cross-border effect', are given in Table 7.10 on the following pages.

As discussed in sections 7.3.1. and 7.4.1, UK target companies in both cross-border and domestic acquisitions significantly underperform over the period prior to the bid announcement. However, as can be seen from Figure 7.3, UK target companies in cross-border acquisitions performed *worse* than target companies in domestic UK acquisitions during the early pre-bid period (t-8, t-4). The differences in abnormal returns were not, however, generally statistically significant (except for month t-4, where, according to the IM and CAPM, target companies in cross-border acquisitions performed significantly worse than target companies in domestic UK acquisitions). During the bid announcement month, the differences in abnormal returns were small. However, during months t-2, t-1, and t+1, target companies gained (generally significantly) more in cross-border than in domestic acquisitions. Indeed, over the four month period from t-2 to t+1, the differences in cumulative abnormal returns to cross-

166 One reason for bid revision may be if the bid is competitive. Indeed, the correlation coefficient between these two variables was positive, at 0.198. Another cause for bid revision may have been opposition to the bid by target company management. Unfortunately, no data was available on whether or not the bids were hostile.

border and domestic takeover targets, amounted to +7.99 percentage points for the index model (significant at the 95% level), +8.58 percentage points for the capital asset pricing model (90% significance level) and +10.23 percentage points for the market model (95% significance level)[167]. The results provide clear evidence of a large, positive target company cross-border effect in the UK over the 1986-1991 period.

Table 7.10.

Differences in Average Abnormal Returns to Target Companies in Cross-Border and Domestic Acquisitions in the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1. The table shows the percentage point target company 'cross-border effect' (abnormal return to target company shareholders in cross-border acquisitions less abnormal returns to target company shareholders in domestic UK acquisitions).

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8	-0.0126 (-1.13)	-0.0184* (-1.55)	-0.0121 (-1.02)
t-7	-0.0047 (-0.45)	-0.0043 (-0.37)	0.0006 (0.05)
t-6	0.0019 (0.18)	0.0107 (0.92)	0.0125 (1.09)
t-5	-0.0111 (-1.07)	-0.0033 (-0.31)	-0.0007 (-0.06)
t-4	-0.0211** (-1.86)	-0.0197** (-1.69)	-0.0138 (-1.19)
t-3	-0.0017 (-0.14)	0.0055 (0.45)	0.0100 (0.82)
t-2	0.0296*** (1.98)	0.0204 (1.22)	0.0261* (1.56)
t-1	0.0320** (1.92)	0.0315** (1.76)	0.0370*** (2.07)
t	-0.0029 (-0.10)	-0.0023 (-0.07)	0.0094 (0.27)
t+1	0.0356**** (2.62)	0.0426**** (2.26)	0.0328*** (2.26)

167 These cumulative abnormal return values refer to the (reduced) samples of cross-border and domestic companies for which data was available for month t+1. (For a discussion of data availability, see Chapter 6).

Table 7.10 (Continued).

Differences in Average Cumulative Abnormal Returns

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8, t-7	-0.0173 (-1.22)	-0.0227* (-1.50)	-0.0115 (-0.74)
t-8, t-6	-0.0154 (-0.80)	-0.0120 (-0.59)	0.0010 (0.05)
t-8, t-5	-0.0265 (-1.17)	-0.0153 (-0.63)	0.0003 (0.01)
t-8, t-4	-0.0475** (-1.80)	-0.0350 (-1.27)	-0.0135 (-0.48)
t-8, t-3	-0.0492* (-1.54)	-0.0295 (-0.92)	-0.0035 (-0.11)
t-8, t-2	-0.0196 (-0.54)	-0.0091 (-0.23)	0.0226 (0.59)
t-8, t-1	0.0124 (0.31)	0.0224 (0.52)	0.0596* (1.39)
t-8, t	0.0094 (0.20)	0.0201 (0.37)	0.0690 (1.27)
t-8, t+1	0.0250 (0.49)	0.0615 (1.02)	0.1031** (1.70)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively. The level of statistical significance has been calculated using a t-test for differences in mean (Weiss and Hassett (1986), pp. 422-426).

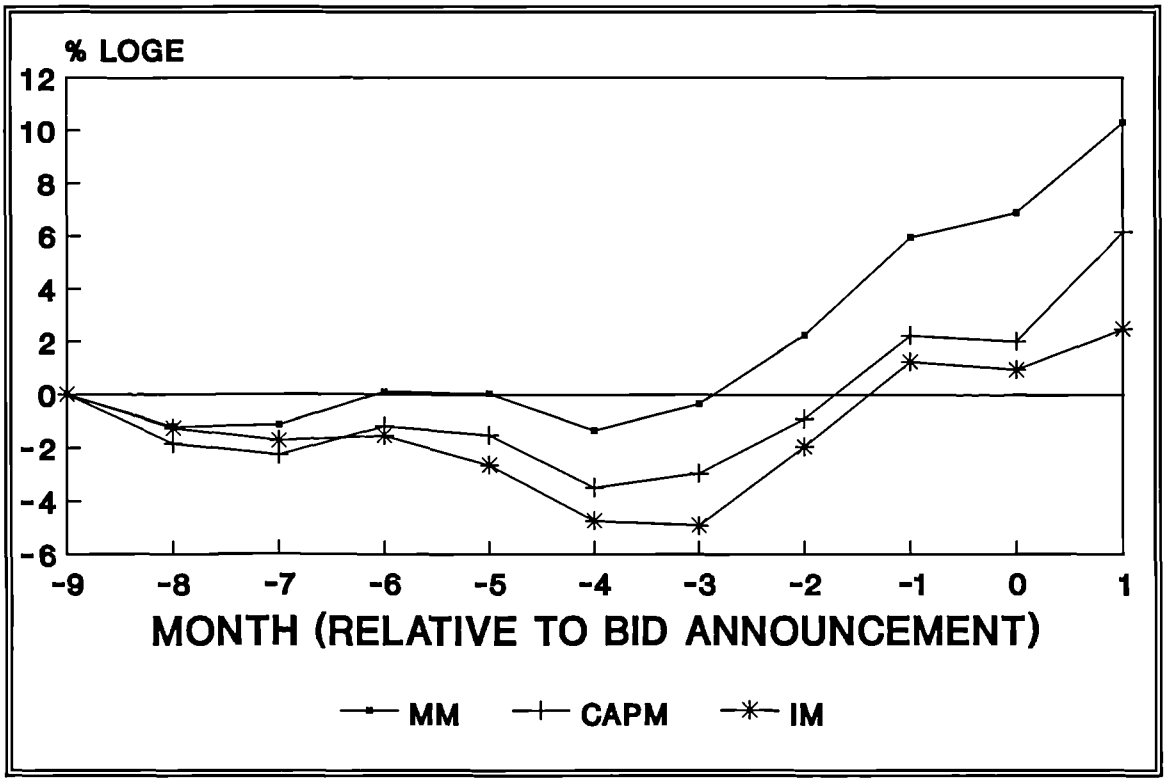
However, taking into account the poor pre-bid performance of UK target companies in cross-border acquisitions, the difference in cumulative abnormal returns over the total analysis period (t-8, t+1) of 2.50 percentage points with the index model, 6.15 percentage points with the capital asset pricing model and 10.31 percentage points with the market model, was only statistically significant (at the 80% level) with the market model.

Lessard (1993) argued that the difference in abnormal returns to shareholders of target companies in domestic and cross-border acquisitions may be due to the different types of companies targeted. With regard to cross-border acquisitions into the US, Lessard suggested that a possible "...explanation might be that domestic and

Figure 7.3.

Differences in the Average Cumulative Abnormal Returns to Target Companies in Cross-Border and Domestic Acquisitions in the United Kingdom (1986 - 1991)

Average cumulative abnormal returns (CAR) to listed UK target companies who received takeover bids from overseas companies, less the CAR to listed UK target companies who received takeover bids from other UK companies. For information on model specifications, see Table 7.1.



foreign firms bid for different populations of target firms". (pp. 282-283). According to Lessard, there is thus a possibility of any 'cross-border effect' having more to do with the characteristics of the takeover targets, than purely with the nationality of the bidding firm. This issue is analysed in the cross-sectional analysis in the following section.

7.5.2. Cross-Sectional Analysis of Target Company 'Cross-Border Effect'

As indicated in the previous section, while the total (t-8, t+1) index model CAR was found to be 2.5 percentage points higher in cross-border than in domestic acquisitions, the difference was not found to be statistically significant. In the cross-sectional analysis, several significant variables were identified. However, the influence

of bidder nationality generally remained insignificant. The regression output from the cross-sectional analysis of total event window target company cross-border effect, is summarised in Table 7.11. These results clearly indicate that, as was the case for target companies in domestic acquisitions, the most significant explanatory variable was related to the method of payment. Target company shareholders, on average (in both cross-border and domestic acquisitions) appears to have gained an additional 10 to 14 percentage point (depending on regression specification) where the offer contained a full cash alternative. Indeed, the target cross-border effect, as identified in the previous section, disappear once the method of payment is controlled for. Consequently, the cross-border effect appears to be associated with a 'payment effect'. The cross-sectional analyses of the pre-bid and bid periods are contained in Tables 7.12 and 7.13. These regressions indicate that the vast majority of the payment effect, as one would expect, took place during the bid period[168].

The evidence in Table 7.13 also indicates that target company shareholders experienced additional positive abnormal returns in revised bids (although the effect of bid revision was not significant for either of the event window sub-periods). During the bid announcement period, target companies also gained (marginally) more in competitive than in single-bidder contests. This variable was not, however, significant for the total (t-8, t+1) event window.

It was further established that target company shareholders gained additional abnormal returns where the bidding company held a pre-bid stake in the target company. As this additional abnormal return took place during the period prior to the offer (as reported in Table 7.12) rather than during the bid period, one possible explanation for this result could be that the pre-bid share price was pushed up by the building of the share stake (rather than being directly attributable to the bid itself).

Finally, the results highlight the impact of company size. Firstly, larger companies

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168 This is different from the results for the domestic targets (as summarised in Table 6.7), which suggested that target companies where there was a cash offer also performed better than other targets in the period *prior* to the bid announcement.

Table 7.11.

Cross-Sectional Analysis of the Difference in the Total Analysis Period (t-8, t+1) Index Model Cumulative Abnormal Returns to UK Target Companies in Cross-Border and Domestic Acquisitions (Target Company Cross-Border Effect) (1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.172*** (6.97)	0.164*** (6.90)	0.154*** (6.49)	0.076** (2.04)	0.149*** (5.95)	0.160*** (6.42)	0.234*** (4.88)	0.162*** (6.30)	0.153*** (5.60)	0.081** (2.06)	0.076** (2.00)	0.266*** (4.69)	0.201*** (3.01)
Nationality	0.009 (0.17)	0.007 (0.14)	0.006 (0.11)	-0.035 (-0.66)	-0.005 (-0.09)	0.084 (1.13)	0.027 (0.51)	0.006 (0.12)	-0.007 (-0.13)	-0.034 (-0.63)	-0.035 (-0.66)	0.111* (1.48)	0.077 (1.00)
Outcome	-0.034 (-0.68)							-0.045 (-0.83)	-0.046 (-0.83)	-0.021 (-0.42)			-0.076 (-1.21)
Competitive		0.007 (0.13)						0.010 (0.15)	0.033 (0.54)		0.001 (0.02)		0.058 (0.80)
Revised			0.081* (1.37)					0.085* (1.40)					0.116** (1.68)
Pay				0.138*** (3.00)						0.136*** (2.95)	0.138*** (3.00)		0.098** (1.89)
Stake					0.068* (1.46)				0.069* (1.49)				-0.016 (-0.31)
Rel Size						-0.0018*** (-2.40)						-0.0017*** (-2.33)	-0.0014** (-1.86)
Size							-0.021* (-1.59)					-0.032*** (-2.07)	-0.033*** (-2.06)
Obs	676	676	676	676	676	389	669	676	676	676	676	389	389
Adj R^2	0.0%	0.0%	0.0%	1.0%	0.0%	1.1%	0.1%	0.0%	0.0%	0.9%	0.9%	2.0%	3.1%
F-value (*p*-value)	0.24 (0.786)	0.02 (0.980)	0.95 (0.387)	4.51*** (0.011)	1.08 (0.339)	3.22*** (0.041)	1.32 (0.268)	0.66 (0.623)	0.73 (0.574)	3.06*** (0.028)	3.01*** (0.030)	3.59*** (0.014)	2.53*** (0.011)

Table 7.11 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the difference in the average CAR to UK target companies subject to takeover bids from overseas or domestic UK companies. Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Nationality} + \beta_2 \text{Outcome} + \beta_3 \text{Competitive} + \beta_4 \text{Revised} + \beta_5 \text{Pay} + \beta_6 \text{Stake} + \beta_7 \text{Rel Size} + \beta_8 \text{Size} + \epsilon_i$$

Nationality is a dummy variable taking the value 0 if the bidder is a UK based company (domestic bid), and the value 1 if the bidder is based overseas (cross-border bid), Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid market value of the target company, and ϵ is an error term.

Table 7.12.

Cross-Sectional Analysis of the Difference in Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to UK Target Companies in Cross-Border and Domestic Acquisitions (Target Company Cross-Border Effect) (1986-1991)

Variables as defined in Table 7.11.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.069*** (-3.47)	-0.064*** (-3.37)	-0.071*** (-3.73)	-0.092*** (-3.05)	-0.083*** (-4.14)	-0.091*** (-4.15)	-0.056* (-1.47)	-0.069*** (-3.35)	-0.080*** (-3.66)	-0.093*** (-2.91)	-0.088*** (-2.87)	-0.039 (-0.79)	-0.055 (-0.93)
Nationality	-0.042 (-1.04)	-0.039 (-0.98)	-0.042 (-1.05)	-0.053 (-1.26)	-0.053* (-1.30)	0.078* (1.29)	-0.038 (-0.94)	-0.039 (-0.98)	-0.050 (-1.23)	-0.053 (-1.26)	-0.051 (-1.21)	0.089 (1.45)	0.084* (1.31)
Outcome	-0.000 (-0.00)							0.014 (0.33)	0.014 (0.32)	0.003 (0.08)			-0.013 (-0.24)
Competitive		-0.035 (-0.77)						-0.048 (-0.93)	-0.037 (-0.73)		-0.037 (-0.81)		-0.007 (-0.10)
Revised			0.018 (0.38)					0.027 (0.56)					0.059 (0.98)
Pay				0.035 (0.95)						0.036 (0.95)	0.037 (0.98)		0.023 (0.49)
Stake					0.059* (1.62)				0.057* (1.56)				-0.001 (-0.03)
Rel Size						-0.0014** (-2.10)						-0.0013** (-2.05)	-0.0013** (-1.89)
Size							-0.004 (-0.35)					-0 016 (-1.20)	-0.017 (-1.22)
Obs	711	711	711	711	711	412	703	711	711	711	711	412	412
Adj R^2	0.0%	0.0%	0.0%	0.0%	0.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.1%
F-value (*p*-value)	0.54 (0.584)	0.83 (0.435)	0.61 (0.542)	0.99 (0.371)	1.85* (0.158)	2.76** (0.065)	0.55 (0.578)	0.52 (0.718)	1.06 (0.377)	0.66 (0.575)	0.88 (0.452)	2.32** (0.075)	1.03 (0.410)

Table 7.13.

Cross-Sectional Analysis of the Difference in Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to UK Target Companies in Cross-Border and Domestic Acquisitions (Target Company Cross-Border Effect) (1986-1991)

Variables as defined in Table 7.11.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.221**** (17.17)	0.217**** (17.49)	0.217**** (17.53)	0.1555**** (8.01)	0.222**** (17.06)	0.252**** (10.14)	0.237**** (18.95)	0.216**** (16.16)	0.219**** (15.33)	0.152**** (7.44)	0.152**** (7.73)	0.258**** (9.25)	0.191**** (5.86)
Nationality	0.029 (1.11)	0.027 (1.02)	0.028 (1.08)	-0.003 (-0.12)	0.030 (1.12)	0.036* (1.33)	0.002 (0.06)	0.026 (0.99)	0.027 (1.00)	-0.004 (-0.13)	-0.005 (-0.18)	0.006 (0.19)	-0.025 (-0.71)
Outcome	0.001 (0.03)							(-0.015) (-0.53)	-0.015 (-0.51)	0.011 (0.41)			-0.020 (-0.63)
Competitive		0.035 (1.19)						0.038 (1.13)	0.042* (1.29)		0.030 (1.02)		0.053* (1.49)
Revised			0.029 (0.97)					0.023 (0.74)					0.036 (1.06)
Pay				0.102**** (4.28)						0.103**** (4.29)	0.101**** (4.23)		0.104**** (4.03)
Stake					-0.004 (-0.18)				-0.002 (-0.09)				-0.034* (-1.30)
Rel Size						-0.0095* (-1.39)						-0.0002 (-0.44)	0.0000 (0.13)
Size							-0.000 (-0.48)					-0.007 (-0.85)	-0.006 (-0.82)
Obs	711	711	711	711	711	703	412	711	711	711	711	412	412
Adj R^2	0.0%	0.1%	0.0%	2.4%	0.0%	0.2%	0.0%	0.0%	0.0%	2.3%	2.4%	0.0%	3.7%
F-value (*p*-value)	0.62 (0.540)	1.33 (0.266)	1.09 (0.338)	9.77**** (0.000)	0.63 (0.532)	1.65* (0.192)	0.12 (0.891)	0.86 (0.485)	0.73 (0.572)	6.57**** (0.000)	6.87**** (0.000)	0.32 (0.811)	2.98**** (0.003)

gained less (in percentage terms) than did smaller target companies. Secondly, target company gains were also smaller where the pre-bid market capitalisation of the target company was large relative to that of the bidder. These results indicate that bidding companies were prepared to pay higher premiums for smaller targets than for larger ones. The determinants of such size-related differentials is an area which could benefit from further research.

7.6. Conclusion

During the 1986 to 1991 period, large positive abnormal returns accrued to shareholders of listed UK companies targeted by either overseas or domestic UK bidding companies. The gains to target company shareholders (from t-8 to t+1, where t refers to the month of the bid announcement) were, however, higher in cross-border (at +20.21% with the index model, +25.27% with the capital asset pricing model and +26.98% with the market model) than in domestic (at +17.71% with the index model, +19.12% with the capital asset pricing model and +16.66% with the market model) acquisitions. Thus, a positive target company cross-border effect, similar to that previously observed for the US market by e.g., Wansley *et al.* (1983), Tessema (1985), Harris and Ravenscraft (1991), Shaked *et al.* (1991), Cebenoyan *et al.* (1992), Marr *et al.* (1993), Swenson (1993) and Cheng and Chan (1995), appears to have been present in the UK during the 1986-1991 period.

The index model target company cross-border effect of +2.5 percentage points was not statistically significant, although the gains to target company shareholders in cross-border acquisitions was significantly higher than those observed for domestic target companies during the shorter event window from t-2 to t+1 (index model cross-border effect of +7.99 percentage points). Cross-sectional analysis revealed that target company shareholders gained significantly more if either of the following conditions were met: if the bid was revised, if the bid included a full cash alternative, if the bidding company held shares in the target company prior to the bid

announcement, if the target company was small relative to the size of the bidding company, or if the target company was small.

In particular, the method of payment appears to have had a very significant impact on target company shareholder returns. Indeed, the target company cross-border effect was associated with a method of payment effect, as the cross-border effect was marginally (insignificantly) *negative* once the method of payment was controlled for. The positive target company cross-border effect thus appear to be due to the higher abnormal returns to target company shareholders in cash bids and the larger proportion of cross-border than domestic bids including a cash alternative[169].

169 As discussed in Chapter 6 (see Table 6.5), shareholders in 96.5% of the target companies in cross-border acquisitions were offered cash, while a full cash alternative was only available to shareholders of 65% of the UK target companies in domestic acquisitions.

CHAPTER 8

ANALYSIS OF RESULTS FOR LISTED OVERSEAS AND DOMESTIC UK COMPANIES BIDDING FOR LISTED UK COMPANIES

8.1. Summary

This chapter contains an analysis of the abnormal returns to 71 overseas and 414 domestic companies which bid for listed UK companies during the 1986-1991 period. The results obtained are highly dependent on the model used. Three different test models are applied; the index model (IM), the capital asset pricing model (CAPM), and the market model (MM). The market model results are generally lower than those observed for the other models, due to the high α values (discussed further in section 6.5.1).

During the month of the bid announcement, overseas bidders, on average, experienced small abnormal gains, amounting to +0.80% with the index model (IM), +1.43% with the capital asset pricing model (CAPM), and +0.23% with the market model (MM). These positive abnormal returns are, however, only significant with the CAPM (significant at the 80% level). In addition, large negative abnormal returns are observed with all models for the five month period (t+1, t+5) following the bid announcement. Over the total analysis period (t-8, t+5), overseas bidders obtained abnormal returns averaging -5.34% with the IM (significant at the 80% level), -3.55% with the CAPM, and -16.46% with the MM (significant at the 99% level). Further analysis revealed that the abnormal losses were particularly large for overseas bidders based in European countries based outside the European Community, while bidders based outside Europe and the United States experienced abnormal gains.

With regard to the domestic UK bidders, the results vary significantly with the various models. During the pre-bid period (t-8, t-1), domestic bidders outperformed the market, as they had during the parameter estimation period. Consequently, the IM and CAPM revealed large pre-bid gains, while the MM results were close to zero.

However, with all three models, share returns were found to deteriorate significantly at the time of the bid announcement. Abnormal losses were observed for the month of the bid announcement; -0.19% with the IM, -0.22% with CAPM, and -1.11% with the MM (significant at the 95% level). In addition, over the post-bid (t+1, t+5) period, all models reveal negative abnormal returns, which were particularly large with the market model. Over the total analysis period (t-8, t+5), cumulative abnormal returns to domestic UK bidders amounted to +6.79% with the IM (significant at the 99% level), +7.84% with the CAPM (99% level of significance), but -5.42% with the MM (significant at the 95% level).

While the three models provide conflicting with regard to whether domestic bidders gained or lost from the transactions, the models provide uniform evidence regarding the *difference* in abnormal returns to domestic and cross-border bidders. Overseas bidding companies were found to have performed significantly worse than domestic bidders. The difference in abnormal returns (the bidding company 'cross-border effect') over the total analysis period (t-8, t+5) amounted to -12.13 percentage points with the IM (significant at the 99% level), -11.39 percentage points with the CAPM (significant at the 95% level) and -11.04 percentage points with the MM (significant at the 90% level).

Cross-sectional analysis of index model cumulative abnormal returns revealed that while size was found to have a positive impact on bidder returns in cross-border acquisitions, the reverse was true for domestic bidders. Both sets of bidders were found to perform better in cash than in security exchange offers, although this variable was not significant for overseas bidders due to the small number of cross-border bids not including a cash alternative. The negative bidding company cross-border effect remained highly significant even when controlling for the different characteristics of domestic and cross-border bids.

8.2. Introduction

While target company shareholders have almost invariably been found to gain significantly from mergers and acquisitions, much more controversy surrounds the issue of whether takeover activity also benefit shareholders of acquiring companies. The existing literature regarding domestic UK acquisitions (as discussed in Chapter 3) is inconclusive. Similarly, different cross-border studies have reached different conclusions, with (as summarised in Table 4.3) almost equal number of studies suggesting positive and negative bidding company abnormal returns.

This chapter sets out to analyse the abnormal returns to bidding companies which launched takeover bids for UK listed companies during the 1986 to 1991 period. In section 8.3, the abnormal returns to overseas (cross-border) bidding companies is analysed, while a study of the gains and losses to domestic UK bidders is contained in section 8.4. The comparative analysis of abnormal returns to bidding companies in cross-border and domestic acquisitions (known as the bidding company 'cross-border effect') is discussed in section 8.5, while concluding remarks follow in section 8.6.

8.3. Overseas Bidding Companies in Cross-Border Acquisitions Into the UK

8.3.1. Abnormal Returns to Cross-Border Bidding Companies

Table 8.1 contains the average monthly abnormal and cumulative abnormal returns to 71 overseas bidding companies[170] in cross-border acquisitions into the UK during the 1986-1991 period. The cumulative abnormal returns are depicted in Figure 8.1. The table indicates that the three test models generally provide consistent results with regard to the *direction* of any abnormal returns. However, as was the case with e.g., Franks and Harris (1989) and Parkinson and Dobbins (1993), the market model,

170 As discussed in Chapter 6, the sample size of 71 applied to the index model. Due to data limitations, the market model sample was restricted to 50 and the CAPM sample to 48 observations.

the index model and CAPM suggested rather different *levels* of abnormal returns[171].

Table 8.1.

Average Abnormal Returns to Bidding Companies in Cross-Border Acquisitions into the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1.

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8	-0.0110 (-1.01)	0.0054 (0.39)	-0.0054 (-0.45)
t-7	0.0063 (0.85)	-0.0044 (-0.43)	-0.0068* (-1.43)
t-6	0.0163** (1.95)	0.0156** (1.91)	0.0065* (1.40)
t-5	-0.0015 (-0.17)	-0.0026 (-0.23)	-0.0081 (-0.15)
t-4	-0.0071 (-0.81)	-0.0123 (-1.15)	-0.0236 (-1.22)
t-3	-0.0020 (-0.29)	0.0076 (0.90)	-0.0024 (-0.16)
t-2	-0.0111 (-1.26)	-0.0051 (-0.48)	-0.0167* (-1.49)
t-1	-0.0036 (-0.42)	-0.0066 (-0.72)	-0.0126 (-0.80)
t	0.0080 (0.94)	0.0143* (1.58)	0.0023 (0.54)
t+1	-0.0032 (-0.37)	-0.0112 (-1.03)	-0.0162 (-1.18)
t+2	-0.0074 (-0.96)	-0.0040 (-0.42)	-0.0122 (-0.93)
t+3	-0.0042 (-0.43)	0.0056 (0.54)	-0.0028 (-0.17)
t+4	-0.0084 (-0.81)	-0.0008 (-0.09)	-0.0153 (-0.28)
t+5	-0.0245*** (-2.01)	-0.0371*** (-2.50)	-0.0514**** (-4.83)

171 Franks and Harris (1989) found a large difference in the (post-announcement) cumulative abnormal returns depending on the control model applied. The CAR (or TAR in their terminology) over the 24 months following the bid announcement was positive (and significant) using the index model and CAPM, and significantly negative when applying the market model.

Table 8.1 (Continued)

Average Cumulative Abnormal Returns

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8, t-7	-0.0047 (-0.37)	0.0010 (0.05)	-0.0122* (-1.33)
t-8, t-6	0.0115 (0.76)	0.0165 (0.88)	-0.0057 (-0.28)
t-8, t-5	0.0100 (0.66)	0.0140 (0.80)	-0.0138 (-0.31)
t-8, t-4	0.0030 (0.17)	0.0017 (0.09)	-0.0373 (-0.83)
t-8, t-3	0.0010 (-0.06)	0.0093 (0.45)	-0.0397 (-0.82)
t-8, t-2	-0.0100 (-0.52)	0.0043 (0.18)	-0.0563* (-1.32)
t-8, t-1	-0.0137 (-0.73)	-0.0023 (-0.09)	-0.0690* (-1.52)
t-8, t	-0.0057 (-0.28)	0.0120 (0.47)	-0.0667 (-1.25)
t-8, t+1	-0.0088 (-0.39)	-0.0079 (-0.03)	-0.0829* (-1.56)
t-8, t+2	-0.0162 (-0.66)	-0.0032 (-0.10)	-0.0951** (-1.77)
t-8, t+3	-0.0205 (-0.74)	0.0024 (0.07)	-0.0979* (-1.64)
t-8, t+4	-0.0289 (-0.99)	0.0016 (0.05)	-0.1131** (-1.66)
t-8, t+5	-0.0534* (-1.60)	-0.0355 (-0.88)	-0.1646**** (-2.89)

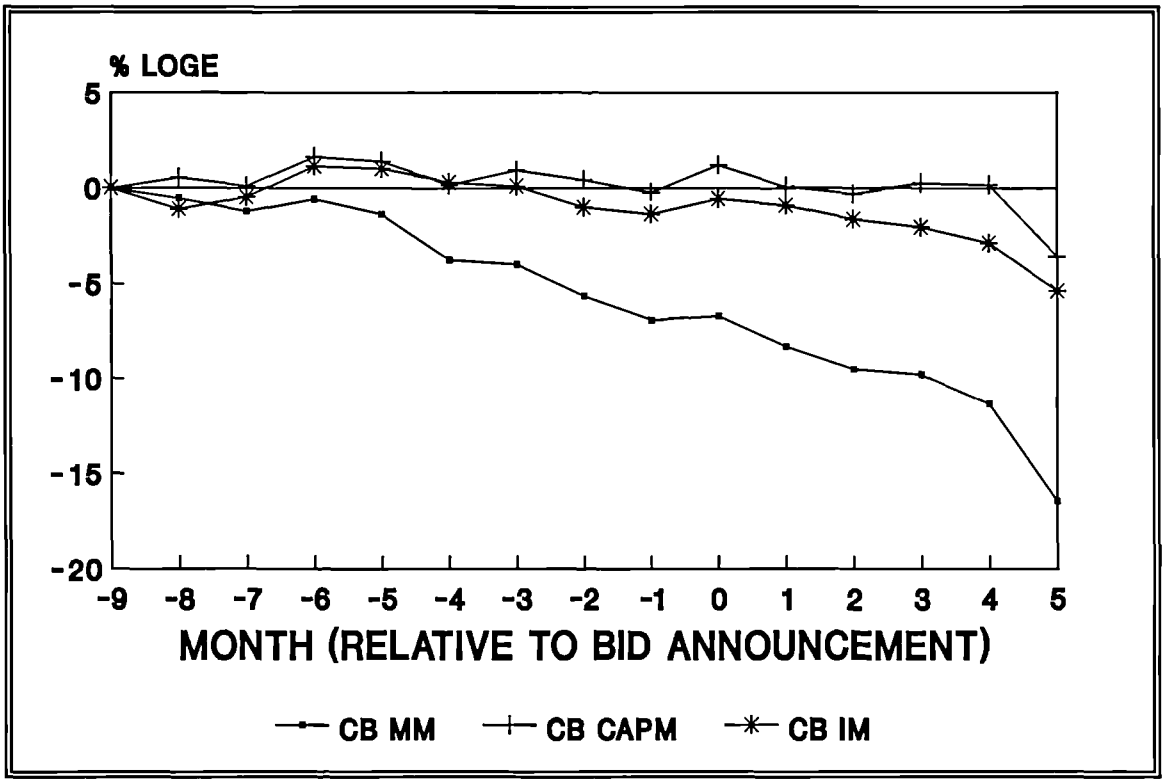
t-statistics (Patell z-scores for the market model) are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively. Following Strong (1992) and Kumar, Sen and Shome (1992), the Patell Standardised Residual (PSR) Test (Patell (1976)) has been applied for the MM. The simple t-test (Strong (1992), pp. 544-545) has been applied for the IM and CAPM.

With regard to the pre-bid period overseas bidding companies, on average, experienced positive abnormal returns during month t-6 (statistically significant with all three models). It is not known why such positive abnormal returns were observed for this month. However, over the next five months average abnormal returns were

Figure 8.1.

Average Cumulative Abnormal Returns to Bidding Companies in Cross-Border Acquisitions into the United Kingdom (1986 - 1991)

Average cumulative abnormal returns (CAR) to overseas companies making takeover bids for UK listed companies (1986-1991). For information on model specifications, see Table 7.1.



negative[172]. Over the period prior to the bid (t-8, t-1) cumulative abnormal returns were insignificantly negative with the index and capital asset pricing models (at -1.37% and -0.23%, respectively), and significantly negative (at -6.90%, significant at the 80% level) with the market model.

The differences in the level of abnormal returns between the various models, appear to be a direct reflection of the different assumptions underlying the models, particularly with regard to the regression constant. While the index and capital asset pricing models fix the regression intercept (at 0 for the IM and $(1-\beta)R_f$ for the CAPM), the market model alpha is estimated from past returns. The assumption of the market model is that the historical relationship between return on the market and return on the

172 The only exception was the small positive abnormal return during t-3 for CAPM.

share provides a good prediction of the future relationship. One implication of this assumption is that if the share outperformed the market during the parameter estimation period, as reflected in a positive α value[173], the share is expected to continue to outperform the market during the analysis period.

The mean α for the overseas bidding companies in this study was 0.00923. As the expected α value (calculated as $(1-\beta)R_f$ from the capital asset pricing model) is only 0.00112, one interpretation of the mean α value, is that the average bidding company is expected to have a rate of return of 0.811% per month (or 9.74% per year) *in addition* to the rate of return required to compensate for the share's level of systematic risk. The large negative abnormal returns observed using the market model indicate that overseas bidding companies were not able to fulfil this expectation over the period surrounding the bid announcement. The very high market model α values may be due to estimation problems, which may render the market model unreliable as a benchmark. However, the negative post-bid abnormal returns were not restricted to the market model. The average overseas bidding company not only performed worse than it had in previous periods, but also marginally underperformed relative to the stock market index in its home market.

During the month of the bid announcement, positive abnormal returns (of +0.80% with the index model, +1.43% with the CAPM (significant at the 80% level), and +0.23% with the market model) were observed. Thus, looking simply at the *short term* abnormal returns, small positive abnormal returns during the bid announcement month were observed in this study. These short-term results are somewhat inconsistent with the results of Feils (1993), who established that US bidders lost marginally over an 11 day period surrounding the announcement of a takeover bid for a UK company. However, the findings in this study may be consistent with those of e.g. Tessema (1985), Doukas and Travlos (1988), Morck and Yeung (1992), Markides and Ittner

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173 As discussed in section 6.5.1, the positive α value *may* be a result of nonsynchroneous trading rather than a clear indication of superior pre-bid share price performance.

(1994) and Doukas (1995a), who all applied short event windows to establish that US companies gained, or did at least not lose, from cross-border acquisitions[174]. It should be remembered, however, that UK was only one of the target countries included in these studies. With regard to studies analysing cross-border acquisitions *into* the United States, several papers have established short-term abnormal losses to shareholders of cross-border bidders (e.g., Mathur *et al.* (1989 and 1994), Servaes and Zenner (1990) and Song (1993)). It is worth stressing, however, that the positive abnormal returns for the bid announcement month observed for the cross-border bidders in this study were not statistically significant (except for CAPM which was significant at the 80% level) and foreign bidding companies usually experienced significant negative abnormal returns over the period *following* the bid announcement.

On average, overseas bidding companies encountered negative abnormal returns in every month following the bid announcement[175]. In particular, large (and highly significant) negative abnormal returns were observed for month t+5. The post-event cumulative abnormal returns (t+1, t+5) amounted to -4.77% with the index model (significant at the 90% level), -4.75% with the capital asset pricing model (significant at the 90% level) and -9.79% with the market model (significant at the 99% level). Thus, as was the case in the study by Conn and Connell (1990), overseas bidding companies were found to have experienced abnormal losses over the period following the bid announcement. However, the *level* of the negative cumulative abnormal returns obtained in this study are much higher than those reported by Conn and Connell. It thus appear that cross-border bidders into the UK over the 1986 to 1991 period performed worse than did US companies acquiring in the UK over the 1971-1980 period. As discussed in section 6.5.4, the cause of these negative abnormal returns during the period following the bid announcement (post announcement drift)

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174 With regard to *domestic* US acquisitions, Jensen and Ruback (1983) obtained results indicating that US bidders gained, or did at least not lose from takeover activity.

175 The only exception was the small positive abnormal return during t+3 for CAPM.

is not yet fully known.

Over the total analysis period *all* models indicate negative abnormal returns (although statistically significant only for the index model and the market model). Cross-border acquisitions into the UK thus appears to have resulted in small initial gains at the time of the bid announcement, which were more than offset by negative abnormal returns during the period following the bid.

8.3.2. National Variations

As indicated in Table 6.2, the sample of 71 cross-border bidders consisted of bidding companies based in 14 different countries. In the same way as cross-border targets (discussed in section 7.2.2), the bidding companies have been classified, according to their nationality, into 4 groups:

a) EC companies (27 observations),

b) Non-EC European companies (11 observations),

c) US companies (17 observations), and

d) Companies based in the rest of the world (16 observations).

The average index model CARs, split according to the nationality-based sub-groups of cross-border bidders, are given in Table 8.2. The second part of the table looks at the differences in mean CARs for the various groups. The results indicate that there were significant differences in the cumulative abnormal returns to overseas bidding companies based in different regions.

The performance of the EC and US based bidders were generally very similar, and close to the overall sample means. Bidding companies based in non-EC European countries, however, performed significantly worse than bidders based in other regions, particularly during the post-event period, during which shareholders of non-EC European companies encountered significant mean abnormal losses of -16.15% These results are surprisingly robust, considering the small sample (11) of non-EC European bidders.

While bidding companies based in Europe and the US earned negative cumulative abnormal returns from their acquisitions into the UK, companies located elsewhere in the world experienced *positive* abnormal returns (although not statistically significant) during all event windows. These 16 bidding companies were, however, based in 4 widely different countries, and one should therefore be careful in attributing these results to national variations[176]. The influence of national differences warrants further research, but would require a larger sample than is available in this study.

Table 8.2.

Average Index Model Cumulative Abnormal Returns to Overseas Bidding Companies in Cross-Border Acquisitions into the United Kingdom by Nationality of the Bidding Company (1986 - 1991)

For information on model specification, see Table 7.1. The second part of the table contains an analysis of the differences in mean cumulative abnormal returns. Cell reference = column heading less row heading. Thus, the first cell (0.1036) refers to CAR of bidding companies based in the EC, less CAR to bidding companies based in non-EC member countries.

Event window	All	EC	Non-EC European	US	Rest of the world
(t-8, t+5)	-0.0534* (-1.60)	-0.0682* (-1.32)	-0.1719* (-1.40)	-0.0534 (-0.92)	0.0532 (1.17)
(t-8, t-2)	-0.0100 (-0.52)	-0.0249 (-0.83)	0.0006 (0.01)	-0.0425 (-1.04)	0.0424 (1.05)
(t-1, t)	0.0044 (0.39)	-0.0018 (-0.09)	-0.0109 (-0.43)	0.0197 (0.88)	0.0089 (0.38)
(t+1, t+5)	-0.0477*** (-2.23)	-0.0416 (-1.29)	-0.1615*** (-2.11)	-0.0307 (-0.84)	0.0020 (0.06)

176 The sample of 16 companies from the "rest of the world" consisted of 4 from Australia, 4 from Canada, 5 from Japan, and 3 from New Zealand. It is interesting to note that the overall positive abnormal returns for this group of companies was attributable exclusively to the Japanese bidders (mean CAR for Australian, Canadian, and New Zealand based companies was marginally negative). Indeed, the mean CAR (t-8, t+5) for the 5 Japanese bidders amounted to +22.01% which, despite the small sample size, is significant at the 95% level. The superior performance of Japanese bidders observed appears to be consistent with the positive abnormal returns to Japanese bidders acquiring in the US, as observed by Pettway *et al.* (1993) and Kang (1993).

Table 8.2. (Continued).

	Event window	EC	Non-EC European	US
Non-EC European	(t-8, t+5)	0.0.1036 (0.78)		
	(t-8, t-2)	-0.0255 (-0.47)		
	(t-1, t)	0.0091 (0.29)		
	(t+1, t+5)	0.1200* (1.45)		
US	(t-8, t+5)	-0.0148 (-0.19)	-0.1184 (-0.87)	
	(t-8, t-2)	0.0176 (0.35)	0.0431 (0.71)	
	(t-1, t)	-0.0215 (-0.73)	-0.0307 (0.91)	
	(t+1, t+5)	-0.0109 (-0.22)	-0.1309* (-1.55)	
Rest of the world	(t-8, t+5)	-0.1215** (-1.76)	-0.2251* (-1.72)	-0.1066* (-1.45)
	(t-8, t-2)	-0.0673* (-1.33)	-0.0418 (-0.69)	-0.0849* (-1.47)
	(t-1, t)	-0.0107 (-0.35)	-0.0198 (-0.58)	0.0109 (0.34)
	(t+1, t+5)	-0.0453 (-0.96)	-0.1635 (-1.97)	-0.0326 (-0.67)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis or cumulative abnormal returns (or differences in cumulative abnormal returns) equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively.

8.3.3. Cross-Sectional Analysis of Cumulative Abnormal Returns to Overseas Bidding Companies in Cross-Border Acquisitions Into the UK

The average index model cumulative abnormal returns to overseas bidding companies during the total analysis period (t-8, t+5), amounted to -5.34%. This section contains an analysis of the cross-sectional variation in cumulative abnormal returns.

As evident from Table 8.3, some of the regressions were relatively successful at explaining the cross-sectional variation in abnormal returns, with a maximum adjusted R^2 of 15.0%. The most significant explanatory variables relate to the size of the target

Table 8.3.

Cross-Sectional Analysis of the Total Analysis Period (t-8, t+5) Index Model Cumulative Abnormal Returns to Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Bidders, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.043 (-1.15)	-0.037 (-0.98)	-0.053* (-1.49)	-0.257* (-1.58)	-0.084** (-1.89)	-0.053 (-1.28)	-0.313*** (-2.68)	-0.036 (-0.89)	-0.062 (-1.24)9	-0.239* (-1.43)	-0.257* (-1.58)	-0.619*** (-3.50)	-0.881*** (-2.95)
Outcome	-0.064 (-0.71)							-0.031 (-0.32)	-0.042 (-0.44)	-0.054 (-0.60)			-0.037 (-0.32)
Competitive		-0.084 (-0.99)						-0.086 (-0.86)	-0.059 (-0.65)		-0.096 (-1.14)		-0.205** (-1.72)
Revised			0.001 (0.00)					0.041 (0.34)					0.098 (0.79)
Pay				0.212 (1.28)						0.203 (1.21)	0.232* (1.39)		0.323 (1.09)
Stake					0.072 (1.06)				0.065 (0.94)				0.005 (0.07)
Rel Size						-0.000 (-0.34)						0.0011** (1.80)	0.0015*** (2.15)
Size							0.039*** (2.32)					0.083*** (3.28)	0.079*** (3.03)
Obs	71	71	71	71	71	55	71	71	71	71	55	55	55
Adj R^2	0 0%	0.0%	0.0%	0.9%	0.2%	0.0%	5.9%	0.0%	0.0%	0.0%	1.3%	14.1%	15.0%
F-value (*p*-value)	0.51 (0.478)	0.99 (0.324)	0.00 (0.997)	1.63 (0.207)	1.12 (0.294)	0.12 (0.732)	5.26*** (0.024)	0.41 (0.745)	0.67 (0.572)	0.99 (0.378)	1.47 (0.238)	5.44*** (0.007)	2.36*** (0.038)

Table 8.3 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the average CAR to overseas bidding companies making cross-border takeover bids for UK companies. Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Outcome} + \beta_2 \text{Competitive} + \beta_3 \text{Revised} + \beta_4 \text{Pay} + \beta_5 \text{Stake} + \beta_6 \text{Rel Size} + \beta_7 \text{Size} + \epsilon_i$$

Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid market value of the bidding company, and ϵ is an error term.

Table 8.4.

Cross-Sectional Analysis of the Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Bidders, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.010 (-0.48)	-0.002 (-0.11)	-0.009 (-0.45)	-0.013 (-0.14)	-0.023 (-0.89)	-0.014 (-0.58)	-0.100* (-1.45)	-0.006 (-0.25)	-0.016 (-0.55)	-0.014 (-0.14)	-0.013 (-0.14)	-0.292*** (-2.79)	-0.3835*** (-2.15)
Outcome	0.002 (0.03)							0.021 (0.37)	0.016 (0.29)	0.002 (0.04)			0.012 (0.18)
Competitive		-0.038 (-0.79)						-0.052 (-0.89)	-0.039 (-0.74)		-0.039 (-0.79)		-0.137** (-1.93)
Revised			-0.005 (-0.08)					0.021 (0.30)					0.073 (0.99)
Pay				0.003 (0.03)						0.004 (0.03)	0.011 (0.11)		0.106 (0.60)
Stake					0.030 (0.76)				0.026 (0.64)				0.003 (0.06)
Rel Size						-0.0001 (0.35)						0.0007*** (2.01)	0.0008** (1.96)
Size							0.014* (1.36)					0.041*** (2.72)	0.041*** (2.62)
Obs	71	71	71	71	71	55	71	71	71	71	71	55	55
Adj R^2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	9.3%	9.0%
F-value (*p*-value)	0.00 (0.974)	0.62 (0.435)	0.01 (0.934)	0.00 (0.975)	0.58 (0.447)	0.12 (0.730)	1.86* (0.177)	0.26 (0.851)	0.37 (0.773)	0.00 (0.999)	0.31 (0.734)	3.76*** (0.030)	1.77* (0.117)

Table 8.5.

Cross-Sectional Analysis of the Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Bidders, 1986-1991)

Variables as defined in Table 8.3.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.003 (-0.27)	-0.004 (-0.34)	0.002 (0.14)	-0.055 (-1.00)	-0.010 (-0.70)	0.016 (1.13)	0.002 (0.05)	-0.009 (-0.64)	-0.026* (-1.56)	-0.071 (-1.29)	-0.055 (-1.01)	-0.050 (-0.78)	-0.196** (-1.88)
Outcome	0.045* (1.51)							0.035 (1.08)	0.031 (0.98)	0.049* (1.63)			0.021 (0.52)
Competitive		0.044* (1.54)						0.029 (0.86)	0.040* (1.35)		0.041 (1.44)		0.057 (1.36)
Revised			0.024 (0.66)					0.012 (0.30)					-0.006 (-0.15)
Pay				0.062 (1.10)						0.070 (1.26)	0.054 (0.95)		0.140* (1.36)
Stake					0.035* (1.54)				0.040** (1.75)				0.056** (2.01)
Rel Size						0.0001 (0.58)						0.0002 (1.12)	0.0004** (1.71)
Size							0.000 (0.05)					0.010 (1.05)	0.005 (0.60)
Obs	71	71	71	71	71	55	71	71	71	71	71	55	55
Adj R^2	1.8%	1.9%	0.0%	0.3%	1.9%	0.0%	0.0%	0.7%	4.9%	2.6%	1.8%	0.0%	7.0%
F-value (*p*-value)	2.28* (0.136)	2.38* (0.127)	0.44 (0.510)	1.21 (0.275)	2.36* (0.129)	0.34 (0.562)	0.00 (0.957)	1.17 (0.326)	2.21** (0.095)	1.94* (0.151)	1.64 (0.201)	0.72 (0.491)	1.58* (0.164)

Table 8.6.

Cross-Sectional Analysis of the Post-Bid Period (t+1, t+5) Index Model Cumulative Abnormal Returns to Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Bidders, 1986-1991)

Variables as defined in Table 8.3.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.029 (-1.25)	-0.030 (-1.27)	-0.046** (-1.99)	-0.189** (-1.82)	-0.051** (-1.78)	-0.055*** (-2.17)	-0.215**** (-2.88)	-0.021 (-0.85)	-0.021 (-0.66)	-0.154* (-1.48)	-0.189** (-1.85)	-0.277*** (-2.42)	-0.302* (-1.57)
Outcome	-0.111** (-1.98)							-0.088* (-1.43)	-0.089* (-1.48)	-0.105* (-1.86)			-0.071 (-0.94)
Competitive		-0.089** (-1.67)						-0.063 (-1.01)	-0.060 (-1.05)		-0.098** (-1.85)		-0.125* (-1.63)
Revised			-0.018 (-0.27)					0.008 (0.11)					0.031 (0.39)
Pay				0.147* (1.39)						0.129 (1.23)	0.168* (1.60)		0.077 (0.41)
Stake					0.007 (0.16)				-0.000 (-0.00)				-0.054 (-1.04)
Rel Size						-0.0004 (-1.21)						0.0001 (0.31)	0.0003 (0.60)
Size							0.025*** (2.33)					0.033** (1.99)	0.033** (1.95)
Obs	71	71	71	71	71	55	71	71	71	71	71	55	55
Adj R^2	4.0%	2.5%	0.0%	1.3%	0.0%	0.8%	6.0%	2.8%	2.8%	4.7%	4.6%	6.1%	8.3%
F-value (*p*-value)	3.91** (0.052)	2.79** (0.099)	0.07 (0.791)	1.92* (0.170)	0.03 (0.874)	1.46 (0.233)	5.45*** (0.023)	1.67* (0.182)	1.66* (0.183)	2.73** (0.072)	2.70** (0.074)	2.75** (0.073)	1.70* (0.132)

and bidding firms. Firstly, bidding companies performed better in relatively large acquisitions. The impact of relative size is consistent with previous findings by e.g., Feils (1993) and Markides and Ittner (1994). Secondly, large bidders appears to have performed significantly better than smaller ones. These two effects were highly significant, and together help explain 14.1% of the cross-sectional variation in abnormal returns. The cross-sectional analysis of the pre-bid period (t-8, t-2) abnormal returns is given in Table 8.4, while Tables 8.5 and 8.6 contain the results for the bid period and the post-bid period, respectively. With regard to the two size effects, while the impact of size and relative size was positive during all sub-periods, the results were, rather surprisingly, particularly strong during the period *prior* to the bid announcement. If the size of the target relative to the size of the bidder is of importance, one would expect the impact of this variable to be more pronounced during, and after the period of the bid announcement. It is not known whether the significant results for the relative size variable during the pre-bid period was associated with the forthcoming bid announcements, or was attributable to some other, as yet unknown, factor.

With regard to the impact of company size, the results are opposite to what one would expect if a general size-related stock market anomaly (as discussed in section 6.5.2) was present. It may be that larger bidders were better at implementing cross-border acquisitions than smaller ones (as indicated by their superior post-bid performance). However, such an interpretation of the size-effect may be questionable, as large bidders were found to have performed significantly better than smaller ones during the pre-bid period as well. It may thus be that an inverse size effect was present in the overseas markets during the period of study. A complete understanding of the impact of company size still eludes us, and warrants further analysis.

As indicated in Table 8.3, and consistent with e.g., Cakici *et al.* (1996), the level of abnormal losses to overseas bidders were higher in competitive than in single-bidder contests, although the variable was only significant in the final regression in

which all 7 explanatory variables were included. As one would expect (and as evident from Table 8.6), the under-performance of bidders in competitive offers predominately took place during the period *following* the bid announcement, once the competitive nature of the bid became apparent.

Overseas bidders performed better in cash offers compared to bids where no cash alternative was available. While the impact of the method of payment appears to have been large, the variable was generally only marginally significant, due to the very small number (3) of bids in which cash was not available.

As one would expect, considering the large gains to shareholders of target companies in cross-border acquisitions, overseas bidding companies (as indicated in Table 8.5) performed better during the bid period (t-1, t) where they already held a stake in the target prior to launching the bid. However, the impact of the pre-bid stake was not found to be significant over the total analysis period.

The outcome of the bid appears to have had little impact on the level of abnormal returns to the overseas bidders. Similarly, while UK *target* companies in cross-border acquisitions were found (in Section 7.3.2) to have gained more where the terms of the offer were increased, bid revision does not appear to have had a significant impact on the level of abnormal returns to the overseas bidders.

8.4. UK Bidding Companies in Domestic UK Acquisitions

8.4.1. Abnormal returns to domestic bidding companies

The average abnormal and cumulative abnormal returns to the 414 UK companies[177] which bid for listed UK companies during the 1986-1991 period, are given in Table 8.7, while the cumulative abnormal returns are depicted in Figure 8.2. The diagram clearly highlights the importance of the choice of event study methodology. As was the case with e.g., Franks and Harris (1989) and Parkinson and

177 As discussed in Chapter 6, the sample size of 414 refers to the index model. Due to data limitations, capital asset pricing model and market model samples were restricted to 361.

Dobbins (1993), market model results were significantly poorer than those observed using either the capital asset pricing model or the index model. The large difference in cumulative abnormal returns between the market model and the other two models,

Table 8.7.

Average Abnormal Returns to Bidding Companies in Domestic Acquisitions in the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1.

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8	0.0093** (1.91)	0.0093** (1.75)	-0.0006 (-0.24)
t-7	0.0045 (0.97)	0.0019 (0.37)	-0.0078 (-1.23)
t-6	0.0073 (1.26)	0.0084* (1.30)	-0.0014 (0.30)
t-5	0.0123**** (2.75)	0.0108*** (2.17)	0.0018 (0.43)
t-4	0.0108*** (2.25)	0.0141**** (2.88)	0.0044 (0.15)
t-3	0.0120**** (2.85)	0.0120**** (2.63)	0.0028 (0.27)
t-2	0.0112**** (2.60)	0.0132**** (2.72)	0.0042 (0.23)
t-1	0.0131**** (2.77)	0.0177**** (3.34)	0.0087 (1.00)
t	-0.0019 (-0.35)	-0.0022 (-0.38)	-0.0111*** (-2.56)
t+1	-0.0024 (-0.56)	-0.0033 (-0.68)	-0.0127**** (-2.66)
t+2	-0.0071** (-1.82)	-0.0064* (-1.52)	-0.0157*** (-2.57)
t+3	-0.0000 (-0.01)	0.0019 (0.33)	-0.0084 (-0.99)
t+4	0.0097*** (2.04)	0.0100** (1.86)	-0.0000 (0.43)
t+5	-0.0109*** (-2.14)	-0.0089* (-1.59)	-0.0184*** (-2.57)

Table 8.7 (continued).

Average Cumulative Abnormal Returns

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8, t-7	0.0139*** (2.17)	0.0111* (1.59)	-0.0085 (-0.70)
t-8, t-6	0.0212**** (2.59)	0.0196*** (2.14)	-0.0098 (-0.40)
t-8, t-5	0.0334**** (3.58)	0.0304**** (2.88)	-0.0080 (-0.13)
t-8, t-4	0.0043**** (4.42)	0.0445**** (4.01)	-0.0036 (-0.05)
t-8, t-3	0.0562**** (5.05)	0.0564**** (4.50)	-0.0007 (0.06)
t-8, t-2	0.0675**** (5.72)	0.0697**** (5.17)	0.0035 (0.15)
t-8, t-1	0.0805**** (6.26)	0.0873**** (5.92)	0.0121 (0.49)
t-8, t	0.0787**** (5.58)	0.0851**** (5.30)	0.0095 (-0.39)
t-8, t+1	0.0763**** (5.22)	0.0818**** (4.92)	-0.0118 (-1.21)
t-8, t+2	0.0692**** (4.39)	0.0754**** (4.26)	-0.0274** (-1.93)
t-8, t+3	0.0691**** (4.12)	0.0773**** (4.17)	-0.0358*** (-2.13)
t-8, t+4	0.0788**** (4.58)	0.0873**** (4.66)	-0.0358** (-1.93)
t-8, t+5	0.0679**** (3.60)	0.0784**** (3.86)	-0.0542*** (-2.55)

t-statistics (Patell z-scores for the market model) are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 99 or 99 percent level of significance respectively. Following Strong (1992) and Kumar, Sen and Shome (1992), the Patell Standardised Residual (PSR) Test (Patell (1976)) has been applied for the MM. The simple t-test (Strong (1992), pp. 544-545) has been applied for the IM.

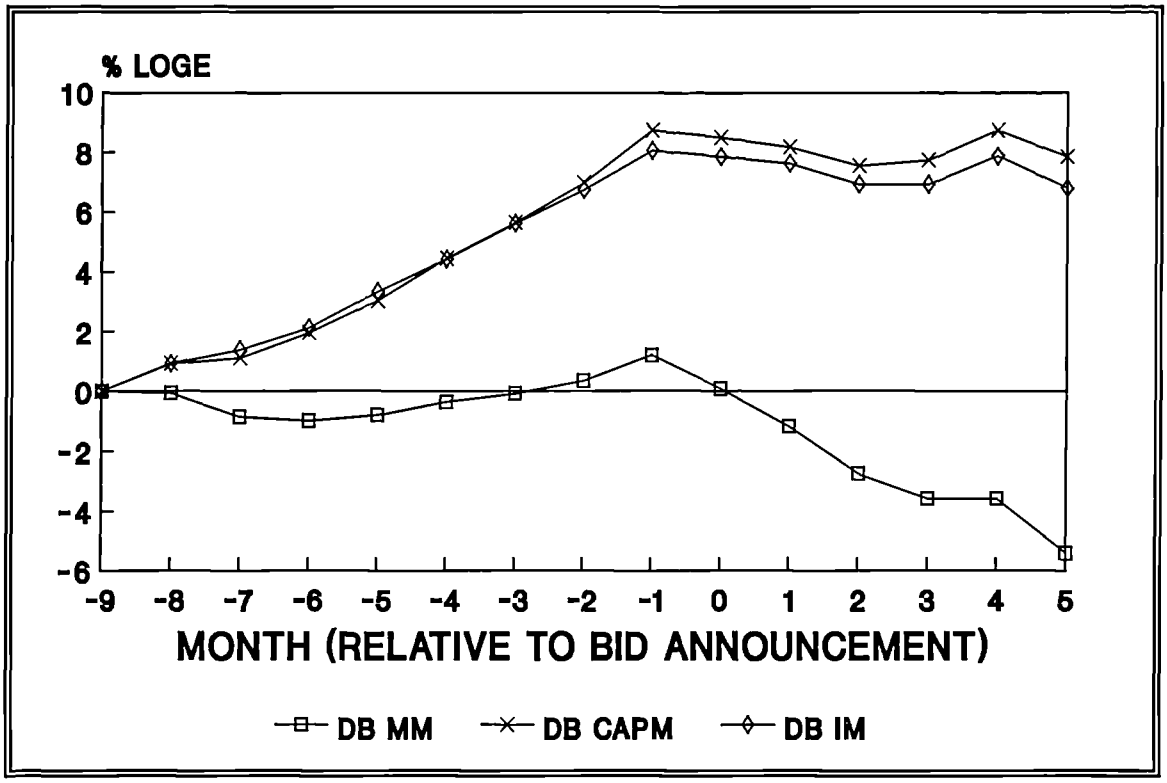
is due to the high market model constant term. It appears that domestic UK bidders substantially outperformed the market during the parameter estimation period, resulting in high α values[178]. Thus, despite using a long (60 month) parameter estimation

178 As discussed in Section 6.5.1, high α values *may* be attributable to thin trading rather than to superior share price performance.

Figure 8.2.

Average Cumulative Abnormal Returns to Bidding Companies in Domestic Acquisitions in the United Kingdom (1986 - 1991)

Average cumulative abnormal returns (CAR) to domestic UK companies making takeover bids for UK listed companies (1986-1991). For information on model specifications, see Table 7.2.



period, the high alpha values suggest that the market model parameters may not have been estimated during a period of 'normal' share returns, as assumed by the market model. This would be consistent with e.g. Firth (1980), Franks and Harris (1989), Limmack (1991), and Kennedy and Limmack (1996), who all found UK bidders to have launched their bids after "...extended periods of superior performance..." (Kennedy and Limmack, (1996), p. 277). In addition, Jensen (1986a) (in his free cash-flow theory) argued that exceptionally good pre-bid performance may be a contributing motive for launching acquisitions. The mean monthly α value of 0.010072 observed in this study (compared to the expected α value of 0.00044 based on the capital asset pricing model) implies that domestic UK bidders, with the market model, are expected to earn a rate of return of 11.56% per annum *in addition* to the rate of return required to compensate shareholders for the company's level of systematic risk. This accounts

for the large difference in CARs between the index model and the market model.

Over the pre-bid period UK bidders significantly outperformed the market, as reflected by the index model CAR (t-8, t-1) of +8.05%, significant at the 99% level. As judged by the insignificant market model abnormal returns, the pre-bid performance of domestic bidders was equivalent to that observed during the previous five year parameter estimation period. However, all models indicate a substantial change in the share returns at the time of the bid announcement, with negative abnormal returns for all test models (significant at the 95% level with the market model) during the month of the offer being made. This is in contrast to the small *positive* abnormal returns observed for the overseas bidders during this month. Over the five months following the bid announcement, the index model and the capital asset pricing model suggest small negative abnormal returns for domestic bidders, while the market model report large, and highly significant, abnormal losses.

The CAR for the total analysis period (t-8, t+5) ranged from a highly significant gain of +6.79% with the index model and +7.84% with the capital asset pricing model, to a significant loss of -5.42% with the market model[179]. Thus, the results indicate that during the pre-bid period, domestic UK bidders continued to outperform the market, as they had done during the previous five year period. However, the bid announcement had a significant negative impact on shareholder returns, ending the extended period of outperformance. Over the post-bid period, share returns were similar to those observed for the stock market as a whole, but substantially lower than that observed for the bidders during the pre-bid period.

8.4.2. Cross-Sectional Analysis of Cumulative Abnormal Returns to Domestic Bidding Companies in Domestic UK Acquisitions

The cross-sectional analysis of the total analysis period (t-8, t+5) index model

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179 The large difference between those observed using the market model and those obtained using the other two models, is due to the large market model α values. As these α values (as well as the generally low β values) indicate parameter estimation problems (see section 6.5.1), it is believed that the index model may provide the most suitable benchmark against which to evaluate bidding company returns.

cumulative abnormal returns of +6.79% is given in Table 8.8. While the regressions generally explained a relatively small fraction of the cross-sectional variation in abnormal returns (maximum adjusted R^2 of 3.1%), some of the regressions, and several of the variables, were found to be highly statistically significant. The most important explanatory variable relates to the method of payment. Bidding companies offering a full cash alternative performed significantly better than other bidders. Indeed, as indicated by regression 4, UK bidding companies not offering cash, on average, encountered marginal abnormal *losses* during the period of study. These results are consistent with the information asymmetry arguments advocated by e.g., Myers and Majluf (1984), Hansen (1987), Amihud *et al.* (1990), and Bhagat and Hirshleifer (1993), and the empirical evidence as reported by e.g., Travlos (1987), Franks *et al.* (1988), Franks and Harris (1989) and Kaplan and Weisbach (1992) for the US, and Limmack and McGregor (1992) for the UK.

While large overseas bidders performed better than smaller ones, the reverse was true for domestic UK bidders. Over the total event window, large bidding companies gained significantly less than smaller ones. Looking at the cumulative abnormal returns for the various sub-periods (as reported in Table 8.9, 8.10, and 8.11), it is apparent that small bidders significantly outperformed larger ones during the period up to the bid announcement, while large predators performed significantly better than smaller ones over the period following the acquisition. The pre-bid results *may* be consistent with a general size effect (as discussed in Section 6.5.2), but with larger companies handling the acquisitions better than smaller predators. However, the detailed analysis required to fully understand the impact of company size on acquisition returns is beyond the scope of this thesis.

A rather surprising finding is that UK bidding companies performed better when the terms of the offer were increased. As revealed in Table 8.10, this effect was particularly strong during the bid period (t-1, t). While one would expect *target* company shareholders to gain more in revised bids, it is less clear why an increase

Table 8.8.

Cross-Sectional Analysis of the Total Analysis Period (t-8, t+5) Index Model Cumulative Abnormal Returns to Domestic UK Bidding Companies in Domestic Acquisitions (Domestic Bidders, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.056*** (2.62)	0.065*** (3.19)	0.052*** (2.56)	-0.014 (-0.45)	0.053*** (2.43)	0.066*** (3.36)	0.141*** (2.65)	0.044*** (1.98)	0.041** (1.69)	-0.032 (-0.95)	-0.018 (-0.53)	0.163*** (2.78)	0.083* (1.35)
Outcome	0.057 (1.23)							0.053 (1.06)	0.058 (1.17)	0.069* (1.51)			0.035 (0.68)
Competitive		0.022 (0.40)						-0.023 (-0.38)	-0.003 (-0.05)		0.024 (0.44)		0.044 (0.73)
Revised			0.110*** (2.05)					0.107** (1.95)					0.082* (1.50)
Pay				0.125*** (3.19)						0.130*** (3.31)	0.126*** (3.19)		0.118*** (2.87)
Stake					0.059* (1.35)				0.059* (1.36)				0.048 (1.08)
Rel Size						0.0006 (0.23)						-0.0000 (-0.02)	0.0003 (0.13)
Size							-0.016* (-1.56)					-0.020** (-1.76)	-0.027*** (-2.40)
Obs	414	414	414	414	414	357	409	414	414	414	414	357	357
Adj R^2	0.1%	0.0%	0.8%	2.2%	0.2%	0.0%	0.3%	0.6%	0.1%	2.5%	2.0%	0.3%	3.1%
F-value (*p*-value)	1.52 (0.219)	0.16 (0.690)	4.21*** (0.041)	10.19*** (0.002)	1.83* (0.176)	0.06 (0.815)	2.42* (0.121)	1.78* (0.151)	1.12 (0.340)	6.26*** (0.002)	5.18*** (0.006)	1.57 (0.210)	2.61*** (0.012)

Table 8.8 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the average CAR to domestic bidding companies making takeover bids for other UK companies. Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = Constant + \beta_1 Outcome + \beta_2 Competitive + \beta_3 Revised + \beta_4 Pay + \beta_5 Stake + \beta_6 Rel\ Size + \beta_7 Size + \epsilon_i$$

Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid market value of the bidding company, and ϵ is an error term.

Table 8.9.

Cross-Sectional Analysis of the Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to Domestic UK Bidding Companies in Domestic Acquisitions (Domestic Bidders, 1986-1991)

Variables as defined in Table 8.8.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.061*** (4.61)	0.065*** (5.09)	0.061*** (4.76)	0.042** (2.08)	0.060*** (4.38)	0.066*** (5.20)	0.194*** (5.70)	0.056*** (3.97)	0.053*** (3.48)	0.033* (1.55)	0.039** (1.87)	0.215*** (5.80)	0.185*** (4.67)
Outcome	0.029 (0.99)							0.024 (0.77)	0.026 (0.84)	0.033 (1.13)			-0.002 (-0.06)
Competitive		0.021 (0.59)						0.001 (0.04)	0.009 (0.25)		0.021 (0.61)		0.038 (0.98)
Revised			0.047* (1.40)					0.043 (1.26)					0.025 (0.72)
Pay				0.040* (1.59)						0.042** (1.68)	0.040* (1.60)		0.049** (1.85)
Stake					0.030 (1.12)				0.030 (1.12)				0.019 (0.67)
Rel Size						0.0012 (0.73)						0.0002 (0.14)	0.0005 (0.29)
Size							-0.027*** (-4.04)					-0.030*** (-4.26)	-0.034*** (-4.62)
Obs	414	414	414	414	414	357	409	414	414	414	414	357	357
Adj R^2	0.0%	0.0%	0.2%	0.4%	0.1%	0.0%	3.6%	0.0%	0.0%	0.4%	0.2%	4.5%	4.8%
F-value (*p*-value)	0.99 (0.321)	0.35 (0.552)	1.97* (0.162)	2.54* (0.112)	1.25 (0.265)	0.544 (0.464)	16.32*** (0.000)	0.88 (0.450)	0.77 (0.512)	1.91* (0.150)	1.45 (0.235)	9.36*** (0.000)	3.58*** (0.001)

Table 8.10.

Cross-Sectional Analysis of the Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to Domestic UK Bidding Companies in Domestic Acquisitions (Domestic Bidders, 1986-1991)

Variables as defined in Table 8.8.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.010 (1.22)	0.010 (1.23)	0.005 (0.62)	-0.009 (-0.71)	0.017*** (2.07)	0.006 (0.74)	0.043*** (2.13)	0.004 (0.50)	0.015* (1.63)	-0.011 (-0.85)	-0.010 (-0.84)	0.029* (1.31)	0.010 (0.41)
Outcome	0.006 (0.36)							0.001 (0.04)	0.003 (0.15)	0.009 (0.53)			0.005 (0.26)
Competitive		0.013 (0.60)						0.003 (0.15)	0.011 (0.50)		0.013 (0.62)		-0.002 (-0.07)
Revised			0.044*** (2.19)					0.044*** (2.10)					0.043*** (2.05)
Pay				0.030*** (2.02)						0.031*** (2.06)	0.030*** (2.03)		0.037*** (2.35)
Stake					-0.024* (-1.43)				-0.023* (-1.42)				-0.019 (-1.14)
Rel Size						0.002*** (2.22)						0.0020*** (2.04)	0.0021*** (2.16)
Size							-0.007** (-1.73)					-0.004 (-1.12)	-0.006* (-1.45)
Obs	414	414	414	414	414	357	409	414	414	414	414	357	357
Adj R^2	0.0%	0.0%	0.9%	0.7%	0.3%	1.1%	0.5%	0.4%	0.0%	0.6%	0.6%	1.2%	2.9%
F-value (*p*-value)	0.13 (0.718)	0.36 (0.547)	4.81*** (0.029)	4.09*** (0.044)	2.04* (0.154)	4.94*** (0.027)	2.98** (0.085)	1.61* (0.187)	0.80 (0.492)	2.18* (0.114)	2.24* (0.108)	3.10*** (0.046)	2.52*** (0.015)

Table 8.11.

Cross-Sectional Analysis of the Post-Bid Period (t+1, t+5) Index Model Cumulative Abnormal Returns to Domestic UK Bidding Companies in Domestic Acquisitions (Domestic Bidders, 1986-1991)

Variables as defined in Table 8.8.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.015 (-1.27)	-0.009 (-0.80)	-0.013 (-1.15)	-0.047*** (-2.59)	-0.024** (-1.93)	-0.006 (-0.50)	-0.095*** (-3.09)	-0.016 (-1.24)	-0.027** (-1.95)	-0.054*** (-2.79)	-0.046*** (-2.44)	-0.081*** (-2.45)	-0.111*** (-3.16)
Outcome	0.022 (0.83)							0.028 (0.99)	0.029 (1.04)	0.027 (1.04)			0.032 (1.08)
Competitive		-0.011 (-0.35)						-0.027 (-0.80)	-0.024 (-0.70)		-0.010 (-0.33)		0.008 (0.23)
Revised			0.018 (0.60)					0.019 (0.62)					0.014 (0.44)
Pay				0.056*** (2.47)						0.057*** (2.55)	0.056*** (2.47)		0.032* (1.37)
Stake					0.052*** (2.11)				0.052*** (2.11)				0.048** (1.91)
Rel Size						-0.0027** (-1.90)						-0.0022* (-1.55)	-0.0023* (-1.55)
Size							0.017*** (2.89)					0.015*** (2.42)	0.013** (1.95)
Obs	414	414	414	414	414	357	409	414	414	414	414	357	357
Adj R^2	0.0%	0.0%	0.0%	1.2%	0.8%	0.7%	1.8%	0.0%	0.6%	1.2%	1.0%	2.1%	2.8%
F-value (*p*-value)	0.69 (0.407)	0.12 (0.724)	0.35 (0.552)	6.11*** (0.014)	4.46*** (0.035)	3.63** (0.058)	8.36*** (0.004)	0.52 (0.667)	1.88* (0.132)	3.60*** (0.028)	3.10*** (0.046)	4.77*** (0.009)	2.48*** (0.017)

in the offer price should also benefit bidders. Pre-bid stakes appears to have had a positive impact on the fortunes of the bidders during the period following the bid announcement, although no such positive impact of pre-bid stakes was observed during the event period.

Bidding companies gained more during the event period (Table 8.10) the larger the size of the target relative to the size of the bidder. However, during the period *following* the bid announcement, large acquisitions resulted in poorer performance of bidders, possibly due to the greater difficulties of integrating a large target into the acquiring firms organisation. Finally, the outcome of the bid and the existence of competition in pursuing the target appears to have had little impact on the fortunes of the UK bidders.

8.5. Comparative Analysis of Bidding Companies in Cross-Border and Domestic Acquisitions

8.5.1. Differential Abnormal Returns to Bidding Company Shareholders in Cross-Border and Domestic Acquisitions (Bidding Company 'Cross-Border Effect')

In this section, the results from the analysis of differences in mean abnormal returns to the 71 overseas bidding companies and the 414 domestic UK bidding companies, are discussed. The differences in abnormal returns (calculated as the mean abnormal returns to overseas predators less the abnormal returns to the domestic bidders), known as the bidding company 'cross-border effect', are given in Table 8.12, and depicted in Figure 8.3.

As discussed in the previous sections, the market model at times provided conflicting results to those obtained using either the index model or the capital asset pricing model with regard to whether bidders experienced gains or losses at the time of the takeover bids. However, as evident from Figure 8.3, when looking at the *difference* in abnormal returns to bidders in cross-border and domestic acquisitions, the three test models provided surprisingly consistent results.

Over the pre-bid period from t-8 to t-1, domestic UK predators significantly

outperformed the market, while overseas bidders experienced insignificant (market model) abnormal losses. Consequently, over the period prior to the month of the bid

Table 8.12.

Differences in Average Abnormal Returns to Bidding Companies in Cross-Border and Domestic Acquisitions in the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1. The table shows the percentage point bidding company 'cross-border effect' (abnormal return to bidding company shareholders in cross-border acquisitions into the UK less abnormal returns to domestic UK bidding companies).

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8	-0.0204** (-1.70)	-0.0039 (-0.26)	-0.0048 (-0.36)
t-7	0.0017 (0.19)	-0.0063 (-0.55)	0.0011 (0.10)
t-6	0.0090 (0.88)	0.0072 (0.69)	0.0079 (0.69)
t-5	-0.0138* (-1.40)	-0.0134 (-1.10)	-0.0100 (-0.75)
t-4	-0.0179** (-1.80)	-0.0264*** (-2.25)	-0.0280*** (-2.12)
t-3	-0.0139** (-1.74)	-0.0044 (-0.46)	-0.0052 (-0.51)
t-2	-0.0223*** (-2.27)	-0.0183* (-1.58)	-0.0208* (-1.63)
t-1	-0.0167** (-1.69)	-0.0242*** (-2.29)	-0.0213*** (-1.96)
t	0.0099 (0.98)	0.0166* (1.53)	0.0134 (1.14)
t+1	-0.0008 (-0.08)	-0.0079 (-0.66)	-0.0035 (-0.28)
t+2	-0.0003 (-0.03)	0.0024 (0.23)	0.0035 (0.33)
t+3	-0.0042 (-0.38)	0.0037 (0.31)	0.0056 (0.41)
t+4	-0.0181 (-1.59)	-0.0108 (-1.01)	-0.0153 (-1.18)
t+5	-0.0136 (-1.03)	-0.0282** (-1.78)	-0.0330*** (-1.98)

Table 8.12 (Continued).

Differences in Average Cumulative Abnormal Returns

Period	Index Model	Capital Asset Pricing Model	Market Model
t-8, t-7	-0.0187* (-1.29)	-0.0102 (-0.51)	-0.0037 (-0.21)
t-8, t-6	-0.0096 (-0.58)	-0.0030 (-0.15)	0.0042 (0.21)
t-8, t-5	-0.0234* (-1.32)	-0.0164 (-0.81)	-0.0058 (-0.27)
t-8, t-4	-0.0413*** (-2.08)	-0.0427** (-1.86)	-0.0338* (-1.29)
t-8, t-3	-0.0552**** (-2.66)	-0.0471** (-1.94)	-0.0390* (-1.33)
t-8, t-2	-7.75**** (-3.43)	-0.0654*** (-2.44)	-0.0598** (-1.80)
t-8, t-1	-0.0942**** (-4.16)	-0.0897**** (-3.13)	-0.0811*** (-2.22)
t-8, t	-0.0843**** (-3.40)	-0.0731*** (-2.53)	-0.0677** (-1.71)
t-8, t+1	-0.0851**** (-3.14)	-0.0810*** (-2.35)	-0.0712* (-1.59)
t-8, t+2	-0.0854**** (-2.92)	-0.0786*** (-2.20)	-0.0677* (-1.44)
t-8, t+3	-0.0896**** (-2.77)	-0.0749*** (-1.98)	-0.0621 (-1.26)
t-8, t+4	-0.1077**** (-3.17)	-0.0857*** (-2.10)	-0.0773* (-1.42)
t-8, t+5	-0.1213**** (-3.16)	-0.1139*** (-2.51)	-0.1104** (-1.78)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 99 or 99 percent level of significance respectively. The level of statistical significance has been calculated using a t-test for differences in mean (Weis and Hassett (1986), pp. 422-426).

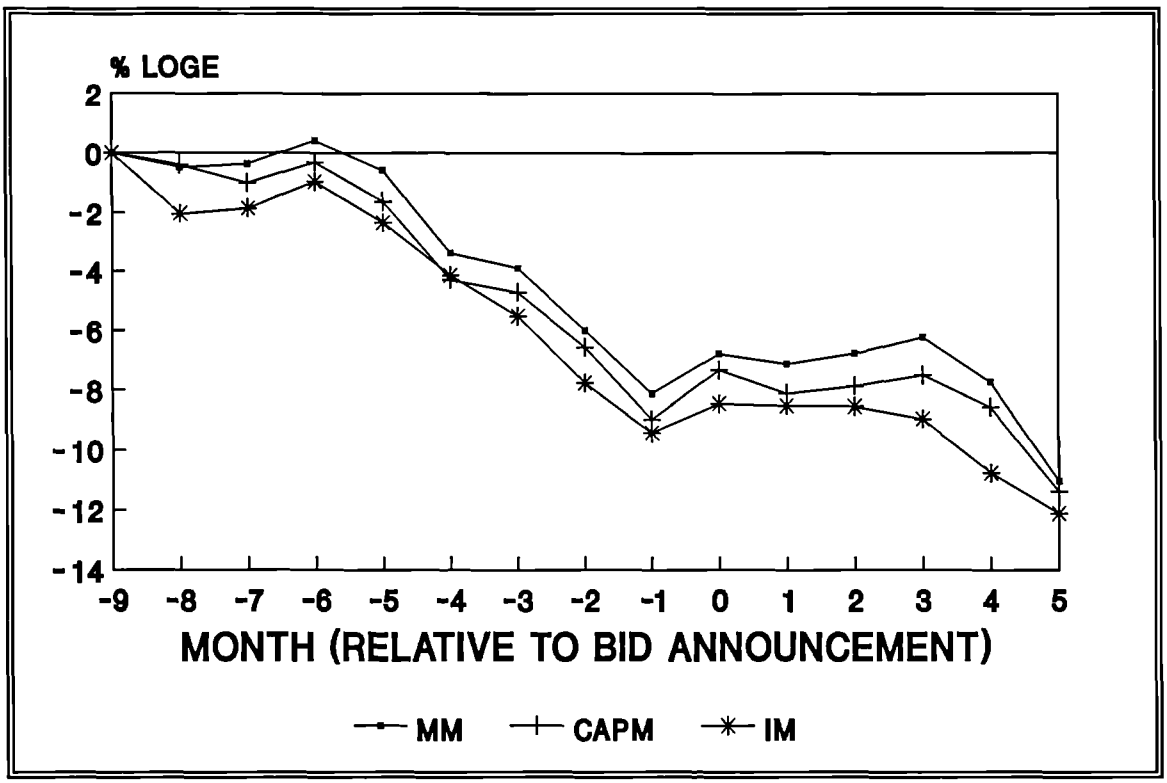
announcement, domestic bidders, on average, performed significantly better than overseas bidders. The difference in the level of pre-bid (t-8, t-1) abnormal returns was highly significant with all models, and ranged from 6.77 percentage points with the market model to 8.43 percentage points with the index model.

During the month of the bid announcement, overseas bidders gained while

Figure 8.3.

Differences in the Average Cumulative Abnormal Returns to Bidding Companies in Cross-Border and Domestic Acquisitions in the United Kingdom (1986 - 1991)

Average cumulative abnormal returns (CAR) to listed overseas bidding companies who bid for listed companies in the UK, less the CAR to listed UK companies who bid for listed UK companies. For information on model specifications, see table 7.1.



domestic bidders lost. The bidding company cross-border effect during this month was thus positive, at +0.99 percentage points for the index model, +1.66 percentage points with CAPM (significant at the 80% level) and +1.34 percentage points for the market model.

However, over the five month period following the bid, overseas bidders performed substantially worse than did domestic bidders. The negative cross-border effect was particularly large during the final two months of the event window. Indeed, during month t+5, overseas bidders were (with the CAPM and MM) found to have performed significantly worse than domestic bidders.

As evident from the above discussion, the magnitude and direction of the bidding company cross-border effect is highly dependent on the event window chosen. While

overseas bidders performed better than domestic bidders during the month of the bid announcement, the reverse was true for both the pre- and post-bid periods. Over the total analysis period from t-8 to t+5, overseas bidders underperformed, with cumulative abnormal returns in excess of 11 percentage points lower than observed for domestic UK bidders.

8.5.2. Cross-Sectional Analysis of Bidding Company 'Cross-Border Effect'

Over the 14 month event window from t-8 to t+5, domestic bidding companies, on average, obtained index model cumulative abnormal returns 12.13 percentage points higher than those observed for the average overseas bidding company. In this section, cross-sectional regressions are analysed in order to ascertain whether the apparent negative bidding company cross-border effect is attributable to different bid characteristics, or whether the cross-border effect is a 'true' nationality effect.

As revealed in Table 8.13, several of the explanatory variables were found to be highly statistically significant. However, despite some of the regressions, and the nationality and payment effects in particular, being found to be highly statistically significant, the adjusted R^2 of the regressions were generally fairly low.

As was the case for target company shareholders (as reported in Table 7.11), the method of payment proved to be the most significant factor in explaining the cross-sectional variations in bidding company cumulative abnormal returns. As one would expect from the literature, bidders generally performed significantly better in cash than in security exchange offers, particularly during the period following the bid announcement (as reported in Table 8.16). However, despite a higher proportion of cross-border than domestic bids including full cash alternatives, the overall bidding company cross-border effect was not attributable to differences in the method of payment. Indeed, the most important finding of the regressions is that regardless of what other variables are included in the analysis, the negative bidding company cross border effect was found to be highly statistically significant, and to exceed 10

Table 8.13.

Cross-Sectional Analysis of the Difference in Total Analysis Period (t-8, t+5) Index Model Cumulative Abnormal Returns to Bidding Companies in Cross-Border and Domestic Acquisitions (Bidding Company Cross-Border Effect, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.059*** (2.91)	0.068*** (3.49)	0.054*** (2.77)	-0.016 (-0.52)	0.052*** (2.54)	0.067*** (3.50)	0.094*** (1.98)	0.049*** (2.31)	0.045** (1.96)	-0.030 (-0.92)	-0.016 (-0.52)	0.112*** (2.06)	0.038 (0.66)
Nationality	-0.119*** (-2.50)	-0.121*** (-2.54)	-0.118*** (-2.48)	-0.160*** (-3.30)	-0.132*** (-2.74)	-0.120*** (-2.29)	-0.105*** (-2.18)	-0.114*** (-2.38)	-0.129*** (-2.66)	-0.159*** (-3.28)	-0.160*** (-3.29)	-0.102** (-1.81)	-0.131*** (-2.31)
Outcome	0.042 (1.00)							0.045 (1.01)	0.047 (1.04)	0.053* (1.29)			0.031 (0.66)
Competitive		0.002 (0.04)						-0.039 (-0.74)	-0.015 (-0.29)		0.002 (0.05)		0.009 (0.16)
Revised			0.096*** (1.99)					0.100*** (2.01)					0.078* (1.54)
Pay				0.128*** (3.42)						0.132*** (3.52)	0.128*** (3.42)		0.115*** (2.86)
Stake					0.061* (1.61)				0.061* (1.61)				0.044 (1.11)
Rel Size						-0.0001 (-0.23)						-0.0003 (-0.47)	-0.0002 (-0.29)
Size							-0.006 (-0.69)					-0.009 (-0.89)	-0.016* (-1.52)
Obs	485	485	485	485	485	412	480	485	485	485	485	412	412
Adj R^2	1.1%	0.9%	1.7%	3.3%	1.4%	0.8%	1.0%	1.6%	1.3%	3.4%	3.1%	0.8%	2.9%
F-value (*p*-value)	3.73*** (0.025)	2.23*** (0.041)	5.23*** (0.006)	9.16*** (0.000)	4.54*** (0.011)	2.75** (0.065)	3.53*** (0.030)	2.91*** (0.021)	2.54*** (0.039)	6.67*** (0.000)	6.09*** (0.000)	2.10** (0.100)	2.54*** (0.011)

Table 8.13 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the difference in the average CAR to overseas and domestic UK companies making takeover bids for listed UK companies. Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Nationality} + \beta_2 \text{Outcome} + \beta_3 \text{Competitive} + \beta_4 \text{Revised} + \beta_5 \text{Pay} + \beta_6 \text{Stake} + \beta_7 \text{Rel Size} + \beta_8 \text{Size} + \epsilon_i$$

Nationality is a dummy variable taking the value 0 if the bidder is a UK based company (domestic bid), and the value 1 if the bidder is based overseas (cross-border bid), Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid market value of the bidding company, and ϵ is an error term.

Table 8.14.

Cross-Sectional Analysis of the Difference in Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to Bidding Companies in Cross-Border and Domestic Acquisitions (Bidding Company Cross-Border Effect, 1986-1991)

Variables as defined in Table 8.13.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.062*** (4.92)	0.066*** (5.49)	0.062*** (5.07)	0.0423** (2.22)	0.060*** (4.67)	0.067*** (5.50)	0.159*** (5.27)	0.058*** (4.35)	0.054*** (3.84)	0.035** (1.72)	0.041** (2.10)	0.181*** (5.25)	0.153*** (4.13)
Nationality	-0.076*** (-2.58)	-0.078*** (-2.63)	-0.076*** (-2.57)	-0.089*** (-2.93)	-0.083*** (-2.76)	-0.082** (-2.43)	-0.040* (-1.29)	-0.074** (-2.50)	-0.081*** (-2.71)	-0.088*** (-2.91)	-0.090*** (-2.94)	-0.036 (-1.02)	-0.049* (-1.35)
Outcome	0.025 (0.89)							0.025 (0.90)	0.025 (0.92)	0.029 (1.12)			0.002 (0.06)
Competitive		0.009 (0.32)						-0.010 (-0.30)	-0.000 (-0.00)		0.009 (0.32)		0.014 (0.40)
Revised			0.041* (1.35)					0.040* (1.29)					0.026 (0.79)
Pay				0.038* (1.64)						0.041** (1.72)	0.038* (1.64)		0.046** (1.80)
Stake					0.030* (1.28)				0.030* (1.29)				0.018 (0.72)
Rel Size						0.0002 (0.43)						-0.0002 (-0.56)	-0.0002 (-0.40)
Size							-0.020*** (-3.37)					-0.023*** (-3.52)	-0.026*** (-3.87)
Obs	485	485	485	485	485	412	480	485	485	485	485	412	412
Adj R^2	1.2%	1.0%	1.4%	1.5%	1.3%	0.9%	3.2%	1.1%	1.1%	1.6%	1.3%	3.6%	3.7%
F-value (*p*-value)	3.89** (0.021)	3.46** (0.032)	4.33** (0.014)	4.77*** (0.009)	4.25** (0.015)	2.96** (0.053)	9.00*** (0.000)	2.36** (0.053)	2.36** (0.053)	3.60** (0.014)	3.21** (0.023)	6.16*** (0.000)	2.96*** (0.003)

Table 8.15.

Cross-Sectional Analysis of the Difference in Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to Bidding Companies in Cross-Border and Domestic Acquisitions (Bidding Company Cross-Border Effect, 1986-1991)

Variables as defined in Table 8.13.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.009 (1.16)	0.009 (1.20)	0.005 (0.70)	-0.009 (-0.81)	0.014** (1.87)	0.007 (1.04)	0.037*** (2.07)	0.003 (0.41)	0.011 (1.28)	-0.013 (-1.06)	-0.012 (-1.00)	0.026* (1.29)	0.004 (0.18)
Nationality	-0.006 (-0.35)	-0.008 (-0.45)	-0.006 (-0.31)	-0.016 (-0.89)	-0.005 (-0.26)	0.007 (0.35)	0.004 (0.22)	-0.006 (-0.32)	-0.005 (-0.30)	-0.016 (-0.87)	-0.018 (-0.95)	0.015 (0.69)	0.008 (0.39)
Outcome	0.011 (0.72)							0.005 (0.33)	0.006 (0.38)	0.014 (0.90)			0.012 (0.70)
Competitive		0.018 (1.02)						0.007 (0.37)	0.015 (0.79)		0.019 (1.03)		0.002 (0.08)
Revised			0.042*** (2.31)					0.040*** (2.12)					0.037** (1.92)
Pay				0.031*** (2.21)						0.033*** (2.28)	0.031*** (2.21)		0.037*** (2.43)
Stake					-0.013 (-0.91)				-0.013 (-0.88)				-0.008 (-0.54)
Rel Size						0.0002 (0.95)						0.0001 (0.64)	0.0002 (0.74)
Size							-0.005* (-1.61)					-0.004 (-0.99)	-0.006* (-1.38)
Obs	485	485	485	485	485	412	480	485	485	485	485	412	412
Adj R^2	0.0%	0.0%	0.7%	0.6%	0.0%	0.0%	0.1%	0.4%	0.0%	0.6%	0.6%	0.0%	1.3%
F-value (*p*-value)	0.33 (0 720)	0.60 (0.552)	2.73** (0.066)	2.52** (0.082)	0.48 (0.617)	0.56 (0.572)	1.36 (0.259)	1.46 (0.215)	0.52 (0.718)	1.95* (0.121)	2.03* (0.109)	0.70 (0.553)	1.67* (0.104)

Table 8.16.

Cross-Sectional Analysis of the Difference in Post-Bid Period (t+1, t+5) Index Model Cumulative Abnormal Returns to Bidding Companies in Cross-Border and Domestic Acquisitions (Bidding Company Cross-Border Effect, 1986-1991)

Variables as defined in Table 8.13

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	-0.012 (-1.01)	-0.007 (-0.65)	-0.013 (-1.13)	-0.049*** (-2.78)	-0.022** (-1.85)	-0.008 (-0.72)	-0.102*** (-3.69)	-0.012 (-0.97)	-0.021* (-1.59)	-0.052*** (-2.77)	-0.045*** (-2.53)	-0.095*** (-3.07)	-0.119*** (-3.57)
Nationality	-0.037* (-1.34)	-0.035* (-1.29)	-0.037* (-1.33)	-0.055** (-1.95)	-0.044* (-1.61)	-0.046* (-1.51)	-0.070*** (-2.48)	-0.033 (-1.21)	-0.042* (-1.50)	-0.054** (-1.94)	-0.053** (-1.89)	-0.080*** (-2.51)	-0.090*** (-2.77)
Outcome	0.005 (0.21)							0.015 (0.57)	0.015 (0.58)	0.010 (0.43)			0.017 (0.62)
Competitive		-0.026 (-0.93)						-0.036 (-1.20)	-0.040 (-1.03)		-0.026 (-0.94)		-0.007 (-0.22)
Revised			0.0138 (0.49)					0.020 (0.71)					0.016 (0.54)
Pay				0.058*** (2.70)						0.059*** (2.72)	0.058*** (2.69)		0.032* (1.39)
Stake					0.044*** (2.01)				0.043*** (1.98)				0.034* (1.48)
Rel Size						-0.0005* (-1.50)						-0.0002 (-0.62)	-0.0002 (-0.55)
Size							0.019*** (3.52)					0.018*** (3.00)	0.016*** (2.57)
Obs	485	485	485	485	485	412	480	485	485	485	485	412	412
Adj R^2	0.0%	0.1%	0.0%	1.4%	0.8%	0.8%	2.5%	0.0%	0.6%	1.3%	1.4%	2.7%	2.7%
F-value (*p*-value)	0.93 (0.396)	1.34 (0.262)	1.03 (0.359)	4.55*** (0.011)	2.94** (0.054)	2.58** (0.077)	7.16*** (0.001)	0.88 (0.476)	1.74* (0.140)	3.09*** (0.027)	3.33*** (0.020)	4.76*** (0.003)	2.43*** (0.014)

percentage points in every regression. Consequently, the finding that overseas bidders, on average, performed significantly worse than domestic bidders over the total analysis period appears to be a true nationality effect, rather than attributable to the method of payment, or any other attribute of the bid controlled for in this study.

The cross-sectional analysis of the pre-bid period cumulative abnormal returns is provided in Table 8.14, while the regressions for the bid and post-bid periods are reported in Table 8.15 and 8.16, respectively. As discussed in the previous section, and as evident from the highly significant negative 'Nationality' coefficients in Table 8.14, overseas bidders performed significantly worse than domestic bidders during the pre-bid period.

During the bid period (t-1, t), as reported in Table 8.15, the cross-border effect was indistinguishable from zero. However, over the post-bid (t+1, t+5) period, the negative bidding company cross-border effect, as reported in Table 8.16, was generally significant, especially once the method of payment and the company size was controlled for.

The cross-sectional analysis reveals that the highly significant differences in pre- and post-bid, as well as total analysis period, average cumulative abnormal returns to overseas and domestic predators can not be fully attributed to differences in bid characteristics. Consequently, cross-border acquisitions into the UK during the 1986-1991 period were, on average, significantly more detrimental to bidding company shareholder wealth than were domestic UK acquisitions during the same time period.

8.6. Conclusion

This chapter contains an analysis of the level of abnormal returns to bidding company shareholders in domestic and cross-border acquisitions into the UK during the 1986 to 1991 period. The analysis revealed that the level of abnormal returns to bidding company shareholders is highly dependent on the test model and event window applied. Due to the high mean market model α values, the level of abnormal

returns using the market model are substantially lower than those observed using either the index model or the capital asset pricing model. The problems associated with the market model parameters may cause the market model to be too stringent a benchmark against which to evaluate bidding company returns[180]. However, regardless of which test model is applied, the results indicate that bidding company shareholders in both domestic and cross-border acquisitions, on average, encounter negative abnormal returns during the five month period following the bid announcement. Studies based on short event windows are thus unlikely to capture the whole wealth effect associated with takeover activity.

The negative abnormal returns to bidding company shareholders were significantly worse in cross-border than in domestic acquisitions, indicating a negative bidding company cross-border (which exceeded 11 percentage points with all three test models). Cross-sectional analysis revealed that bidding company returns were higher in cash than in equity financed transactions, although the variable was not significant in cross-border acquisitions, due to the small number of such transactions not including a full cash alternative. The negative target company cross-border effect remained highly significant even when the characteristics of the bid were controlled for. The negative post-bid abnormal returns, which were particularly large in cross-border acquisitions, raise questions regarding the merit of such transactions.

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180 Due to the parameter estimation problems associated with the market model (and to a lesser extent the capital asset pricing model) and due to the less stringent data requirements of the index model, the index model will be applied for the analysis of joint abnormal returns, contained in Chapter 9.

CHAPTER 9

ANALYSIS OF THE COMBINED WEALTH EFFECTS FOR TARGET AND BIDDING COMPANIES' SHAREHOLDERS IN CROSS-BORDER AND DOMESTIC ACQUISITIONS

9.1. Summary

This chapter contains an analysis of the joint abnormal returns to pairs of target and bidding company shareholders in 55 cross-border and 356 domestic acquisitions.

During the pre-bid period (t-8, t-2) the share price performance of the overseas bidders was generally very similar to that of the stock market indices in their respective home markets, while their UK target companies tended to perform poorly (except for the last month, t-2). When combined, the overall abnormal returns during this pre-bid period, while positive for most months, tended to be relatively small. Of more significance, however, the results also indicate that during the bid period (t-1, t), significant positive abnormal returns were encountered. Thus, while overseas bidders lost due to their acquisitions (and the acquisitions thus resulted in a transfer of wealth from bidders to targets), the acquisitions also appears to have *created* significant shareholder wealth. The total joint index model cumulative abnormal returns over the period from t-8 to t+1 amounted to +5.19% (significant at the 95% level). However, large national variations are observed, with cross-border acquisitions into the UK by bidders based in other EC countries resulting, on average, in small overall *losses* in wealth. The cross-sectional analysis revealed that cross-border acquisitions in which there was no cash alternative resulted in large overall losses, while the presence of pre-bid stakes had a significant positive impact on the level of overall abnormal returns.

In domestic UK acquisitions, significant positive joint abnormal returns are observed during months t-2, t-1 and t. Over the whole event window from t-8 to t+1, the total joint cumulative abnormal returns amounted to +8.08%, significant at the 99%

level. Cross-sectional analysis revealed that the abnormal returns were higher in cash than in equity financed acquisitions and, rather surprisingly, in competitive and revised bids. Overall percentage gains were also higher where the joint market values of the target and bidding companies was low.

While the overall gains were higher in domestic than in cross-border acquisitions, the negative overall (t-8, t+1) cross-border effect of 2.89 percentage points was not statistically significant. The negative cross-border effect remain insignificant when the characteristics of the bid is controlled for.

9.2. Introduction

In the previous chapters, the abnormal returns to target and bidding company shareholders have been analysed separately. The question remains, however, whether takeovers in the UK during the 1986-1991 period *overall* were creating additional shareholder wealth. This is the issue assessed in this chapter. This analysis is based on the joint abnormal returns to pairs of targets and bidding companies in cross-border and domestic acquisitions. When analysing the joint abnormal returns to pairs of targets and bidders, it is important to take into account the generally different market values of the bidders and targets (see Table 6.5). Consequently, the abnormal returns for each target and bidder pair is calculated as:

$$[(CAR_{Bidder} * MV_{Bidder}) + (CAR_{Target} * MV_{Target})] / (MV_{Bidder} + MV_{Target})$$

where MV is the pre-bid market value of the company. The average abnormal returns have been calculated as the equally weighted mean of the abnormal returns to each pair of target and bidding companies.

In the previous chapters, three different test models were applied; the capital asset pricing model, the market model, and the index model. As discussed in section 6.5.1, the market model parameters, particularly for bidding companies, may be biased due to the particularly strong share price performance of the bidders during the parameter estimation period. As a result, unlike what one would expect if this period was a time

of 'normal' returns, estimating the market model parameters over this period produced average α values substantially above $(1-\beta)R_f$. Due to these problems with the estimation of market model α values, this model may be an inappropriate benchmark against which to evaluate the share performance of companies engaged in takeover activity. As discussed in the previous chapter, the level of abnormal return estimates obtained using either the capital asset pricing model or the index model were generally fairly similar. However, although the main problems with regard to the market model relates to the calculation of the intercept, it is a possibility that the strong performance of bidders during the parameter estimation period will also have influenced the capital asset pricing model β estimates. (The mean β values are below 1 for all groups of companies with both the market model and the capital asset pricing model). The index model also has the added advantage of having less stringent data requirements than either of the other two models. Thus, a larger number of companies can be analysed with the index model compared to either the capital asset pricing model or the market model. Consequently, this study of joint abnormal returns to pairs of targets and bidders, is restricted to an analysis of index model abnormal returns.

9.3. UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions Into the UK

9.3.1. Joint Abnormal Returns to Target and Bidding Companies in Cross-Border Acquisitions

The joint abnormal returns to the 55 pairs of target and bidding companies in cross-border acquisitions for which data was available, are given in Table 9.1, while the cumulative abnormal returns are depicted in Figure 9.1.

During the time period eight months prior the month of the bid announcement (t-8), pairs of companies which were subsequently engaged in cross-border acquisitions significantly underperformed relative to the stock market index. However, except for month t-3 (where again significant abnormal losses were encountered by shareholders), positive abnormal returns were observed for each of the remaining eight

Table 9.1.

Average Abnormal Returns to Pairs of Target and Bidding Companies in Cross-Border Acquisitions into the United Kingdom (1986 - 1991)

For information on model specification, see Table 7.1. The abnormal return to each pair of target and bidder is weighted according to their respective pre-bid market values as:

$$[(CAR_{Bidder} * MV_{Bidder}) + (CAR_{Target} * MV_{Target})] / (MV_{Bidder} + MV_{Target})$$

The mean abnormal returns and cumulative abnormal returns, as reported in the table, is the equally weighted mean of the abnormal return to each of the 55 pairs of targets and bidders in cross-border acquisitions.

	Index Model	
Period	**Abnormal Returns**	**Cumulative Abnormal Returns**
t-8	-0.0168** (-1.76)	
t-7	0.0136** (1.82)	-0.0032 (-0.27)
t-6	0.0134* (1.35)	0.0102 (0.62)
t-5	0.0002 (0.02)	0.0103 (0.53)
t-4	0.0046 (0.59)	0.0149 (0.72)
t-3	-0.0093* (-1.31)	0.0056 (0.27)
t-2	0.0017 (0.15)	0.0074 (0.34)
t-1	0.0169** (1.66)	0.0243 (1.19)
t	0.0245*** (2.59)	0.0488*** (2.26)
t+1	0.0006 (0.07)	0.0519*** (1.99)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 99 or 99 percent level of significance respectively, using the simple t-test (Strong (1992), pp. 544-545).

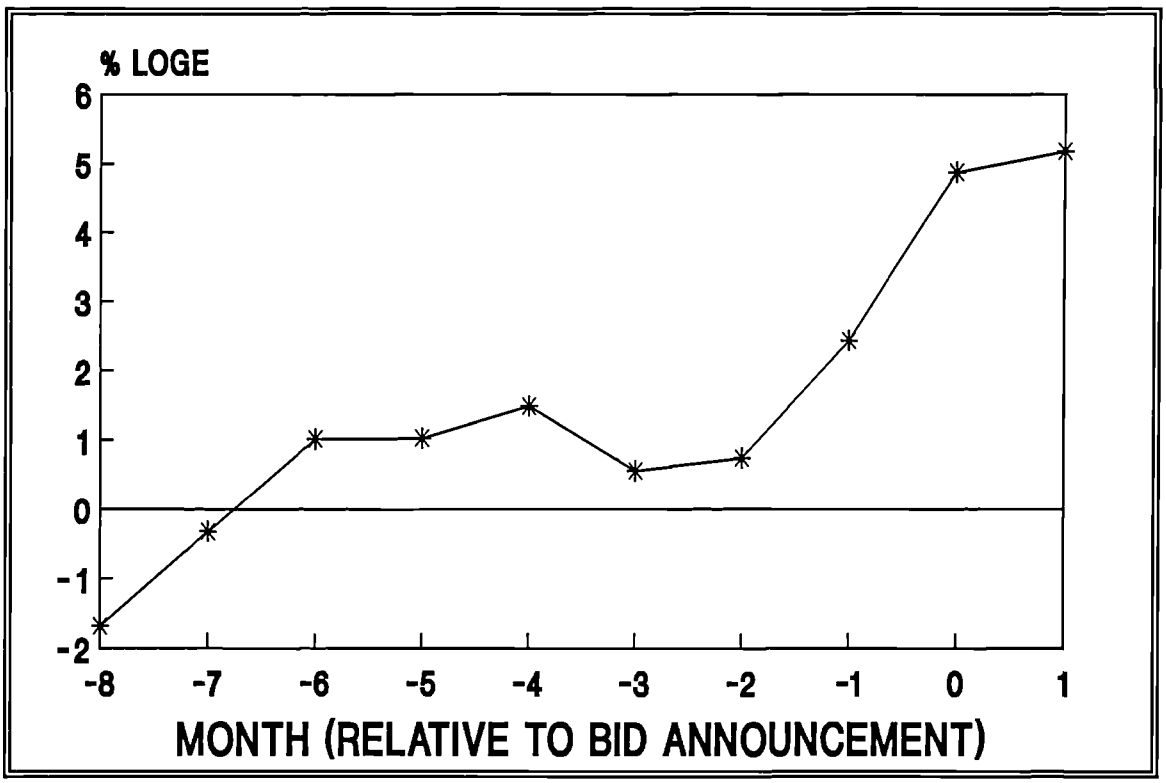
months during the ten month event window from t-8 to t+1[181]. In particular, large (and highly significant) gains were observed for the two month period t-1 and t. During

181 Although data is available for bidders for the longer event window up until t+5, the joint abnormal returns are restricted to the event window from t-8 to t+1, due to the limited data available for target companies following the bid announcement.

Figure 9.1.

Average Joint Index Model Cumulative Abnormal Returns to Overseas Bidding Companies and UK Target Companies in Cross-Border Acquisitions into the United Kingdom (1986-1991)

Average joint cumulative abnormal returns (CAR) to pairs of listed UK target companies who received takeover bids from overseas bidding companies and the overseas bidding companies.



these two months, the average overall gain to pairs of targets and bidders in cross-border acquisitions into the UK amounted to +4.14 percent of their joint pre-bid market values.

In Chapter 8, it was revealed that overseas bidders, on average, lost as a result of their acquisitions into the UK, especially over the period following the bid announcement. However, over the analysis period from t-8 to t+1, the joint index model cumulative abnormal returns to the overseas bidders and their UK targets amounted to +5.19%, significant at the 95% level. The results thus clearly indicate that while the acquisitions resulted in a transfer of wealth from bidders to targets, the gains to target company shareholders significantly exceeded the losses to bidders, even when controlling for the different size of the targets and bidders. Thus, as

evident from the joint cumulative abnormal returns for the time period from eight months prior to, to one month after the month of the bid announcement, cross-border acquisitions into the UK during the 1986-1991 period, on average *created* significant shareholder wealth, although the gains to target company shareholders exceeded the total wealth created, thus frequently causing bidding company shareholders to experience significant loss of wealth.

9.3.2. National Variations

In this section, the differences in total cumulative abnormal returns to pairs of target and bidding company shareholders in cross-border acquisitions, is analysed according to the nationality of the bidders. The results contained in Table 9.2 indicate that there were significant differences in the level of total joint abnormal returns, depending on the region in which the bidding company was incorporated.

While most cross-border acquisitions resulted in positive joint cumulative abnormal returns, acquisitions by companies based in other EC member states resulted in insignificant *negative* abnormal returns for the total analysis period, although significant positive abnormal returns were observed for the shorter (t-1, t) event period. While the abnormal returns to EC bidders were only marginally lower than the average cumulative abnormal returns to overseas bidders (as discussed in section 8.3.2), the gains to UK targets were low in acquisitions by EC based firms (section 7.3.2). Acquisitions by EC companies does thus not appear to have created any overall shareholder wealth. These results would be consistent with a theory that the overall creation of wealth in cross-border acquisitions into the UK during the 1986-1991 period was associated with the entry of companies outside the Single European Market gaining entry to the Single European Market[182]. The gains to target company shareholders in such acquisitions were generally very large, and vastly exceeded the

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182 In order to test such a theory, data on any operations in the European Community by overseas bidders *prior* to the acquisition would be required. Unfortunately, no reliable source for such data was available.

Table 9.2.

Average Index Model Cumulative Abnormal Returns to Matched Pairs of Overseas Bidding Companies and UK Target Companies in Cross-Border Acquisitions into the United Kingdom by Nationality of the Bidding Company (1986 - 1991)

For information on model specification, see Table 7.1. The second part of the table contains an analysis of the differences in mean cumulative abnormal returns. Cell reference = column heading less row heading. Thus, the first cell (-0.0315) refers to CAR of bidding companies based in the EC, less CAR to bidding companies based in non-EC member countries.

Event window	All	EC	Non-EC European	US	Rest of the world
(t-8, t+1)	0.0519*** (1.99)	-0.0057 (-0.11)	0.0258 (0.31)	0.0633* (1.60)	0.1155*** (2.91)
(t-8, t-2)	0.0074 (0.34)	-0.0237 (-0.72)	0.0204 (0.35)	-0.0004 (-0.01)	0.0453 (0.99)
(t-1, t)	0.0415**** (3.07)	0.0390* (1.40)	0.0064 (0.28)	0.0685*** (2.35)	0.0500*** (2.17)

	Event window	EC	Non-EC European	US
Non-EC European	(t-8, t+1)	-0.0315 (-0.33)		
	(t-8, t-2)	-0.0441 (-0.66)		
	(t-1, t)	0.0326 (0.91)		
US	(t-8, t+1)	-0.0690 (-1.08)	-0.0375 (-0.41)	
	(t-8, t-2)	-0.0233 (-0.41)	0.0208 (0.28)	
	(t-1, t)	-0.0295 (-0.78)	-0.0621** (-1.76)	
Rest of the world	(t-8, t+1)	-0.1212** (-1.89)	-0.0897 (-0.98)	-0.0522 (-0.93)
	(t-8, t-2)	-0.0690 (-1.23)	-0.0249 (-0.34)	-0.0457 (-0.71)
	(t-1, t)	-0.0110 (-0.30)	-0.0436* (-1.35)	0.0185 (0.52)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis or cumulative abnormal returns (or differences in cumulative abnormal returns) equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively.

losses to the overseas bidders.

The wealth created in acquisitions by European companies based outside the EC were low, due to the large losses incurred by the overseas bidders in such transactions. As indicated in Chapters 7 and 8, both target and bidding company shareholders obtained superior returns in acquisitions by predators based outside Europe or the US. This is indeed also reflected in the joint abnormal returns, as reported in Table 9.2.

While the positive average joint CAR for the overall sample indicates that the cross-border acquisitions into the UK during the 1986-1991 period overall resulted in an increase in shareholders' wealth, the positive wealth effect was predominately attributable to acquisitions by bidding companies located outside of Europe[183].

9.3.3. Cross-Sectional Analysis of Joint Cumulative Abnormal Returns to Target and Bidding Companies in Cross-Border Acquisitions

The cross-sectional analysis of the total analysis period (t-8, t+1) joint index model cumulative abnormal return of +5.19% observed in cross-border acquisitions, is contained in Table 9.3. The regressions proved to be successful at explaining large proportions of the cross-sectional variation in abnormal returns. Several of the regressions were highly significant, and the maximum adjusted R^2 was 27.3%.

The most significant explanatory variable of joint abnormal returns, proved to be the method of payment. This variable, in isolation, explains 19.5% of the variation in the level of cumulative abnormal returns between pairs of targets and bidders involved in cross-border acquisitions into the UK during the 1986 to 1991 period. In addition, regression 4 clearly indicates that the 3 cross-border acquisitions *not* including a full cash alternative resulted in large and highly significant negative joint abnormal returns.

The total joint abnormal returns also proved to be significantly higher where the

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183 With regard to the cross-border acquisitions into the UK by bidders based in the United States, the percentage joint cumulative abnormal returns observed in this study are substantially higher than those reported by Franks *et al.* (1991) of +3.9% for domestic US acquisitions. The difference may, however, be due to the short 11 day event window applied by Franks *et al.*

Table 9.3.

Cross-Sectional Analysis of the Total Analysis Period (t-8, t+1) Index Model Cumulative Abnormal Returns to UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Acquisitions, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.052** (1.70)	0.056** (1.86)	0.049** (1.74)	-0.319**** (-2.87)	0.001 (0.02)	0.055*** (2.05)	-0.143 (-1.03)	0.051* (1.54)	-0.005 (-0.13)	-0.340**** (-2.94)	-0.319**** (-2.86)	-0.132 (-0.88)	-0.624**** (-3.56)
Outcome	0.008 (0.12)							0.019 (0.27)	-0.001 (-0.01)	0.042 (0.70)			0.008 (0.13)
Competitive		-0.016 (-0.26)						-0.034 (-0.46)	0.0120 (0.30)		-0.039 (-0.68)		-0.020 (-0.31)
Revised			0.020 (0.26)					0.038 (0.43)					0.023 (0.32)
Pay				0.388**** (3.42)						0.401**** (3.47)	0.397**** (3.45)		0.588**** (3.69)
Stake					0.121*** (2.41)				0.125*** (2.35)				0.091** (1.90)
Rel Size						-0.0002 (-0.66)						-0.0001 (-0.88)	0.0008*** (2.34)
Size							0.027* (1.43)					0.026 (1.27)	0.009 (0.49)
Obs	45	45	45	45	45	45	45	45	45	45	45	45	45
Adj R2	0.0%	0.0%	0.0%	19.5%	9.9%	0.0%	2.3%	0.0%	5.7%	18.6%	18.5%	0.1%	27.3%
F-value (*p*-value)	0.02 (0.901)	0.07 (0.798)	0.07 (0.798)	11.68**** (0.001)	5.82*** (0.020)	0.43 (0.515)	2.05* (0.159)	0.10 (0.962)	1.89* (0.147)	6.02**** (0.005)	6.00**** (0.005)	1.02 (0.369)	3.36**** (0.007)

Table 9.3 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the average CAR to matched pairs of UK target companies and overseas bidding companies in cross-border takeover bids (CAR for each pair calculated as weighted average CAR to target and bidder, weighted according to pre-bid market values). Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Outcome} + \beta_2 \text{Competitive} + \beta_3 \text{Revised} + \beta_4 \text{Pay} + \beta_5 \text{Stake} + \beta_6 \text{Rel Size} + \beta_7 \text{Size} + \epsilon i$$

Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid combined market values of the target and bidding companies, and ϵ is an error term.

Table 9.4.

Cross-Sectional Analysis of the Total Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Acquisitions, 1986-1991)

Variables as defined in Table 9.3.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.016 (0.69)	0.020 (0.84)	0.004 (0.16)	-0.227*** (-2.08)	-0.004 (-0.14)	0.010 (0.47)	-0.208** (-1.90)	0.019 (0.73)	0.015 (0.48)	-0.210** (-1.85)	-0.227*** (-2.10)	-0.194* (-1.67)	-0.446*** (-2.54)
Outcome	-0.054 (-0.93)							-0.027 (-0.43)	-0.038 (-0.61)	-0.033 (-0.58)			-0.008 (-0.12)
Competitive		-0.070 (-1.25)						-0.083 (-1.29)	-0.054 (-0.88)		-0.081* (-1.51)		-0.108** (-1.63)
Revised			0.028 (0.43)					0.064 (0.91)					0.067 (0.97)
Pay				0.243*** (2.19)						0.232*** (2.04)	0.259*** (2.34)		0.297** (1.85)
Stake					0.027 (0.61)				0.019 (0.42)				-0.005 (-0.11)
Rel Size						-0.0002 (-0.92)						-0.0001 (-0.38)	0.0003 (0.93)
Size							0.031** (2.00)					0.029** (1.79)	0.025* (1.55)
Obs	55	55	55	55	55	55	55	55	55	55	55	55	55
Adj R2	0.0%	1.0%	0.0%	6.5%	0.0%	0.0%	5.3%	0.0%	0.0%	5.4%	8.8%	3.7%	7.0%
F-value (*p*-value)	0.86 (0.357)	1.57 (0.216)	0.18 (0.671)	4.78*** (0.033)	0.37 (0.543)	0.84 (0.363)	4.00** (0.051)	0.90 (0.448)	0.68 (0.570)	2.53** (0.089)	3.59*** (0.035)	2.04* (0.140)	1.58* (0.165)

Table 9.5.

Cross-Sectional Analysis of the Total Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Acquisitions, 1986-1991)

Variables as defined in Table 9.3.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.027** (1.91)	0.024** (1.73)	0.038*** (2.60)	-0.001 (-0.002)	0.025* (1.44)	0.039**** (2.87)	0.070 (0.98)	0.017 (1.17)	-0.007 (-0.39)	-0.050 (-0.71)	-0.001 (-0.02)	0.040 (0.54)	-0.149* (-1.51)
Outcome	0.089*** (2.57)							0.065** (1.81)	0.059** (1.72)	0.096**** (2.73)			0.033 (0.91)
Competitive		0.095**** (2.89)						0.078*** (2.08)	0.092**** (2.75)		0.094**** (2.82)		0.107**** (2.92)
Revised			0.029 (0.72)					-0.004 (-0.10)					-0.020 (-0.51)
Pay				0.045 (0.61)						0.078 (1.12)	0.027 (0.39)		0.191*** (2.12)
Stake					0.039* (1.43)				0.053*** (2.12)				0.055*** (2.19)
Rel Size						0.0002* (1.37)						0.0002 (1.30)	0.0005*** (2.50)
Size							-0.004 (-0.40)					-0.000 (-0.01)	-0.006 (-0.71)
Obs	55	55	55	55	55	55	55	55	55	55	55	55	55
Adj R2	9.4%	12.0%	0.0%	0.0%	1.9%	1.6%	0.0%	14.3%	21.2%	9.8%	10.6%	0.0%	26.0%
F-value (*p*-value)	6.59*** (0.013)	8.37**** (0.006)	0.51 (0.477)	0.38 (0.542)	2.05* (0.158)	1.88* (0.176)	0.16 (0.687)	4.00*** (0.012)	5.84**** (0.002)	3.94*** (0.025)	4.19*** (0.020)	0.92 (0.404)	3.71**** (0.003)

bidder held a stake in the target company prior to the bid announcement, compared to where no such pre-bid stake was present. Interestingly, while highly significant for pairs of targets and bidders in transnational acquisitions, this variable (as discussed in Chapters 7 and 8) was not significant for either cross-border targets or overseas bidders in isolation. (It should be noted, however, that due to data limitations, the samples of target and bidding companies analysed in this chapter are somewhat smaller than the samples analysed in Chapters 7 and 8).

The overall gains were also somewhat larger where the market value of the target was large relative to that of the bidder, and where the overall (joint) market values of the bidder and target was high. As revealed in Table 8.4 in the previous chapter, these size-effects were of particular importance for the abnormal returns to bidding company shareholders, but had little impact on the fortunes of shareholders of target companies.

The cross-sectional analysis of the pre-bid (t-8, t-2) and bid period (t-1, t) cumulative abnormal returns, are contained in Tables 9.4 and 9.5, respectively. Several of the regressions succeeded in explaining large parts of the cross-sectional variation in pre-bid share performance. The results indicate that companies in bids where there was a full cash alternative, performed significantly better than other companies during the pre-bid period[184].

During the pre-bid period, pairs of targets and bidders with high joint market values performed better than smaller companies. This result (contradictory to a general stock market size effect) was accounted for by the generally strong performance of large overseas bidders during the period prior to making the offer.

Rather surprisingly, targets and bidders in bids which turned out to be competitive, performed worse during the pre-bid period than did other companies engaged in takeover activity. However, during the bid period itself (t-1, t), the competitive nature

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184 While positive, this variable was not (as reported in Tables 7.4 and 8.5) significant for the larger samples of either targets or bidders analysed in isolation.

of the bid had a *positive* impact on the joint abnormal returns to targets and bidders in cross-border acquisitions into the UK. The companies also performed better in failed bids. This was due to overseas bidders, on average, performing (generally marginally) worse in successful than in failed bids.

The method of payment had, as expected, a highly significant impact on the cumulative abnormal returns during the bid period, with both targets and bidders performing better in cash than in security exchange offers. The joint bid period cumulative abnormal returns were also superior where the bidding company held a stake in the target prior to the bid announcement. As discussed in Chapter 8, this was due to the gain on the stake in the target by overseas bidders.

The final variable with significant explanatory power of the bid period cross-sectional variation in abnormal returns, was the relative size of the bidder and target. The overall gains (due to the superior returns to bidders) were higher where the target company was large relative to the market value of the bidder.

9.4. UK Target Companies and Domestic Bidding Companies in Domestic UK Acquisitions

9.4.1. Joint Abnormal Returns to Target and Bidding Companies in Domestic Acquisitions

While data was available for 414 domestic bidders and 568 domestic targets, data was only available for 356 *pairs* of target and bidding companies in domestic acquisitions. The average monthly joint index model abnormal returns are given in Table 9.6, while the cumulative abnormal returns are depicted in Figure 9.2.

During the period from eight to three months prior to the month of the bid announcement, the joint abnormal returns were insignificant. However, from t-2 onwards, large and statistically significant gains accrued to companies involved in domestic UK acquisitions during the 1986 to 1991 period. Highly significant abnormal returns were observed for months t-2 to t, amounting to +7.03% (with the index model) for these three months. Over the total analysis period from t-8 to t+1, joint cumulative

Table 9.6.

Average Abnormal Returns to Pairs of Target and Bidding Companies in Domestic Acquisitions into the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1.

	Index Model	
Period	Abnormal Returns	Cumulative Abnormal Returns
t-8	0.0019 (0.46)	
t-7	-0.0017 (-0.40)	0.0002 (0.04)
t-6	0.0020 (0.51)	0.0023 (0.34)
t-5	0.0056* (1.44)	0.0079 (1.01)
t-4	-0.0006 (-0.13)	0.0073 (0.81)
t-3	-0.0000 (-0.01)	0.0073 (0.67)
t-2	0.0090*** (2.25)	0.0163* (1.33)
t-1	0.0137**** (2.95)	0.0300*** (2.40)
t	0.0476**** (8.22)	0.0776**** (5.65)
t+1	-0.0001 (-0.02)	0.0808**** (5.47)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 99 or 99 percent level of significance respectively, using the simple t-test (Strong (1992), pp. 544-545).

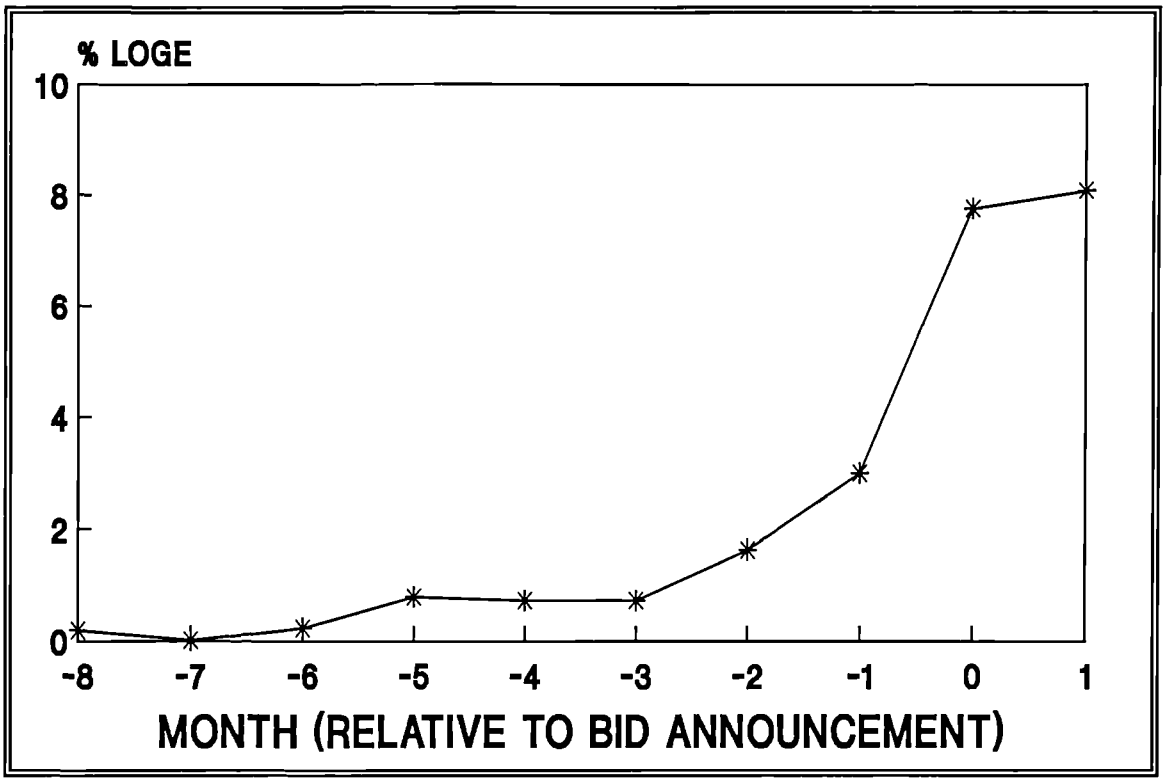
abnormal returns to targets and bidders in domestic acquisitions amounted to +8.08%, significant at the 99% level.

These large positive joint cumulative abnormal returns contradict the findings of Firth (1979 and 1980) who found the value of losses to bidders to exceed the gains to targets and Limmack (1991) who found acquisitions overall to have been approximately a zero-sum game, with losses to bidders matching the gains to targets. The large positive joint cumulative abnormal returns observed in this study are,

Figure 9.2.

Average Joint Index Model Cumulative Abnormal Returns to UK Bidding Companies and UK Target Companies in Domestic Acquisitions in the United Kingdom (1986-1991)

Average joint cumulative abnormal returns (CAR) to pairs of listed UK target companies who received takeover bids from domestic bidding companies and the UK bidding companies.



however, similar to those of Franks and Harris (1989), who found both target *and* bidding companies' shareholders to have gained from domestic UK acquisitions.

It is worth noting, however, that the results in this study, particularly with regard to the bidders (as discussed in Chapter 8), are highly dependent on the methodology applied. The index model abnormal returns, as used in this chapter, are substantially higher than those obtained using the market model. Different event windows also produce different results. Care is therefore required when comparing results obtained in different studies. For example, the overall losses observed by Firth (1979 and 1980) were obtained using the market model, while the results reported by Limmack (1991) involved the application of the market model with α and β obtained from London

Business School Risk Measurement Service[185]. Franks and Harris (1989), however, reported their results using the index model. The difference between the positive joint cumulative abnormal returns as reported Franks and Harris (1989) and in this study, and the negative or neutral combined abnormal returns as obtained by Firth (1979 and 1980) and Limmack (1991) *may*, at least in part, be attributable to the different methodologies applied.

9.4.2. Cross-Sectional Analysis of Joint Cumulative Abnormal Returns to Target and Bidding Companies in Domestic Acquisitions

This section contains the cross-sectional analysis of the total joint index model cumulative abnormal returns to targets and bidders in domestic UK acquisitions. The CAR over the total event window (t-8 to t+1) of +8.08%, is analysed in Table 9.7. The explanatory power of these regressions is generally low, (maximum adjusted R^2 of 3.3%), although some of the regressions and several of the variables were found to be highly significant.

Over the total analysis period, targets and bidders in domestic acquisitions, as in cross-border acquisitions, performed significantly better where the offer included a full cash alternative. The overall gains were also higher in revised and competitive bids. As discussed in Chapters 7 and 8, competitive bids had a significant positive impact on target shareholders' returns, while domestic bidders performed, rather surprisingly, better in revised bids.

While companies involved in cross-border acquisitions were found to have performed better where their joint market values were high, the reverse was true for domestic acquisitions, where smaller companies were found to have performed significantly better than larger ones. The relative size of the targets and bidders did not, however, help explain the cross-sectional variation in joint cumulative abnormal returns to targets and bidders in domestic UK acquisitions.

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185 These parameters are adjusted for thin trading (see section 6.5.1).

Table 9.7.

Cross-Sectional Analysis of the Total Analysis Period (t-8, t+1) Index Model Cumulative Abnormal Returns to UK Target Companies and Domestic Bidding Companies in Domestic UK Acquisitions (Domestic UK Acquisitions, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.076**** (4.57)	0.070**** (4.41)	0.067**** (4.20)	0.035* (1.44)	0.075**** (4.34)	0.082**** (5.46)	0.182**** (3.50)	0.061**** (3.47)	0.065**** (3.39)	0.028 (1.04)	0.025 (0.98)	0.182**** (3.50)	0.133*** (2.49)
Outcome	0.021 (0.57)							-0.005 (-0.13)	-0.003 (-0.08)	0.029 (0.80)			0.007 (0.17)
Competitive		0.076** (1.79)						0.061* (1.31)	0.077** (1.69)		0.076** (1.80)		0.064* (1.39)
Revised			0.094*** (2.27)					0.082** (1.94)					0.068* (1.60)
Pay				0.071*** (2.32)						0.073*** (2.38)	0.071*** (2.32)		0.079*** (2.54)
Stake					0.023 (0.67)				0.022 (0.66)				0.024 (0.72)
Rel Size						-0.0007 (-0.38)						-0.0006 (-0.31)	-0.0001 (-0.03)
Size							-0.019*** (-2.03)					-0.019*** (-2.01)	-0.025**** (-2.58)
Obs	343	343	343	343	343	343	343	343	343	343	343	343	343
Adj R^2	0.0%	0.6%	1.2%	1.3%	0.0%	0.0%	0.9%	1.2%	0.2%	1.2%	1.9%	0.6%	3.3%
F-value (*p*-value)	0.33 (0.568)	3.21** (0.074)	5.14*** (0.024)	5.38*** (0.021)	0.46 (0.500)	0.14 (0.704)	4.11*** (0.043)	2.33** (0.074)	1.21 (0.304)	3.01** (0.051)	4.32*** (0.014)	2.10* (0.124)	2.67**** (0.010)

Table 9.7 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the average CAR to matched pairs of UK target companies and domestic bidding companies in domestic UK takeover bids (CAR for each pair calculated as weighted average CAR to target and bidder, weighted according to pre-bid market values). Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Outcome} + \beta_2 \text{Competitive} + \beta_3 \text{Revised} + \beta_4 \text{Pay} + \beta_5 \text{Stake} + \beta_6 \text{Rel Size} + \beta_7 \text{Size} + \epsilon_i$$

Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid combined market values of the target and bidding companies, and ϵ is an error term.

Table 9.8.

Cross-Sectional Analysis of the Total Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to UK Target Companies and Domestic Bidding Companies in Domestic UK Acquisitions (Domestic UK Acquisitions, 1986-1991)

Variables as defined in Table 9.7.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.012 (0.85)	0.008 (0.61)	0.012 (0.90)	-0.018 (-0.88)	0.009 (0.60)	0.017* (1.39)	0.038 (0.88)	0.006 (0.35)	-0.000 (-0.02)	-0.025 (-1.16)	-0.026 (-1.23)	0.038 (0.89)	0.005 (0.11)
Outcome	0.021 (0.71)							0.003 (0.09)	0.003 (0.10)	0.027 (0.92)			0.012 (0.37)
Competitive		0.058** (1.66)						0.053* (1.40)	0.057* (1.51)		0.057* (1.63)		0.052* (1.36)
Revised			0.029 (0.84)					0.019 (0.54)					0.007 (0.21)
Pay				0.053*** (2.09)						0.055*** (2.16)	0.052*** (2.06)		0.056*** (2.15)
Stake					0.030 (1.06)				0.030 (1.07)				0.030 (1.08)
Rel Size						-0.0008 (-0.53)						-0.0008 (-0.51)	-0.0005 (-0.29)
Size							-0.004 (-0.52)					-0.004 (-0.50)	-0.008 (-1.06)
Obs	356	356	356	356	356	356	356	356	356	356	356	356	356
Adj R^2	0.0%	0.5%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.3%	0.9%	1.4%	0.0%	0.7%
F-value (*p*-value)	0.50 (0.478)	2.76** (0.097)	0.71 (0.399)	4.35*** (0.038)	1.13 (0.289)	0.28 (0.598)	0.27 (0.602)	1.02 (0.385)	1.31 (0.272)	2.60** (0.076)	3.52*** (0.031)	0.27 (0.766)	1.35 (0.227)

Table 9.9.

Cross-Sectional Analysis of the Total Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to UK Target Companies and Domestic Bidding Companies in Domestic UK Acquisitions (Domestic UK Acquisitions, 1986-1991)

Variables as defined in Table 9.7.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.058**** (7.05)	0.059**** (7.57)	0.053**** (6.76)	0.042**** (3.43)	0.066**** (7.81)	0.061**** (8.31)	0.132**** (5.33)	0.050**** (5.82)	0.061**** (6.53)	0.036**** (2.77)	0.040**** (3.10)	0.132**** (5.32)	0.109**** (4.26)
Outcome	0.017 (0.97)							0.013 (0.67)	0.014 (0.76)	0.021 (1.18)			0.015 (0.82)
Competitive		0.015 (0.71)						-0.002 (-0.07)	0.008 (0.37)		0.014 (0.68)		-0.000 (-0.00)
Revised			0.058**** (2.89)					0.057**** (2.77)					0.055**** (2.73)
Pay				0.031*** (2.03)						0.032*** (2.13)	0.030*** (2.02)		0.039*** (2.55)
Stake					-0.017 (-1.03)				-0.017 (-1.03)				-0.017 (-1.07)
rel Size						0.0006 (0.66)						0.0007 (0.77)	0.0008 (0.91)
Size							-0.014**** (-2.99)					-0.014**** (-3.01)	-0.015**** (-3.36)
Obs	356	356	356	356	356	356	356	356	356	356	356	356	356
Adj R^2	0.0%	0.0%	2.0%	0.9%	0.0%	0.0%	2.2%	1.6%	0.0%	1.0%	0.7%	2.1%	5.3%
F- value (*p*-value)	0.94 (0.332)	0.50 (0.479)	8.35**** (0.004)	4.12*** (0.043)	1.07 (0.303)	0.44 (0.507)	8.92**** (0.003)	2.93*** (0.034)	0.71 (0.545)	2.75** (0.065)	2.28* (0.103)	4.75**** (0.009)	3.83**** (0.001)

The cross-sectional analysis of the pre-bid (t-8, t-2) and bid period (t-1, t) cumulative abnormal returns are contained in Tables 9.8 and 9.9, respectively. As in cross-border acquisitions, UK companies in cash acquisitions performed better than other targets and bidders in domestic acquisitions during the period prior to the bid announcement.

Due to the high returns during the pre-bid period for targets in competitive bids[186], this variable had a positive impact on the joint abnormal returns during the period from t-8 to t-2. During the bid period (t-1, t), joint abnormal returns were significantly higher in cash than in equity offers. Total gains were also higher in revised offers. As was the case for the total analysis period (t-8, t+1), pairs of companies with low overall market values performed significantly better than larger companies.

9.5. Comparative Analysis of Joint Abnormal Returns in Cross-Border and Domestic Acquisitions

9.5.1. Differential Joint Abnormal Returns to Target and Bidding Company Shareholders in Cross-Border and Domestic Acquisitions (Total 'Cross-Border Effect')

In this section, the difference in average joint cumulative abnormal returns to targets and bidders in 55 cross-border and 356 domestic acquisitions, is analysed. The difference in the average abnormal returns (the total cross-border effect) are given in Table 9.10, while the differences in cumulative abnormal returns to companies engaged in cross-border and domestic acquisitions, are depicted in Figure 9.3.

During month t-8, companies subsequently engaged in domestic UK acquisitions performed significantly better than companies subsequently involved in cross-border acquisitions. However, during the following month (t-7), the reverse was true. During the remaining months prior to the bid, the difference in abnormal returns to companies

186 As discussed in Chapter 7, this may be due to the other takeover bid having been announced prior to the takeover bid being analysed.

Table 9.10.

Differences in Average Abnormal Returns to Pairs of Target and Bidding Companies in Cross-Border and Domestic Acquisitions in the United Kingdom (1986 - 1991)

For information on model specifications, see Table 7.1. The table shows overall 'cross-border effect' (abnormal returns to pairs of target and bidding company shareholders in cross-border acquisitions into the UK, less abnormal returns to pairs of target and bidding company shareholders in domestic UK acquisitions).

	Index Model	
Period	Abnormal Returns	Cumulative Abnormal Returns
t-8	-0.0188** (-1.79)	
t-7	0.0153** (1.79)	-0.0034 (-0.26)
t-6	0.0114 (1.06)	0.0079 (0.45)
t-5	-0.0055 (-0.54)	0.0024 (0.12)
t-4	0.0051 (0.57)	0.0076 (0.33)
t-3	-0.0092 (-1.09)	-0.0017 (-0.07)
t-2	-0.0073 (-0.60)	-0.0089 (-0.36)
t-1	0.0032 (0.29)	-0.0057 (-0.24)
t	-0.0231*** (-2.08)	-0.0288 (-1.11)
t+1	0.0007 (0.07)	-0.0289 (-0.96)

t-statistics are given in brackets. *, **, *** and **** indicates that the null hypothesis of abnormal return/cumulative abnormal return equal to zero has been rejected at the 80, 90, 95 or 99 percent level of significance respectively. The level of statistical significance has been calculated using a t-test for differences in means (Weis and Hassett (1986), pp. 422-426).

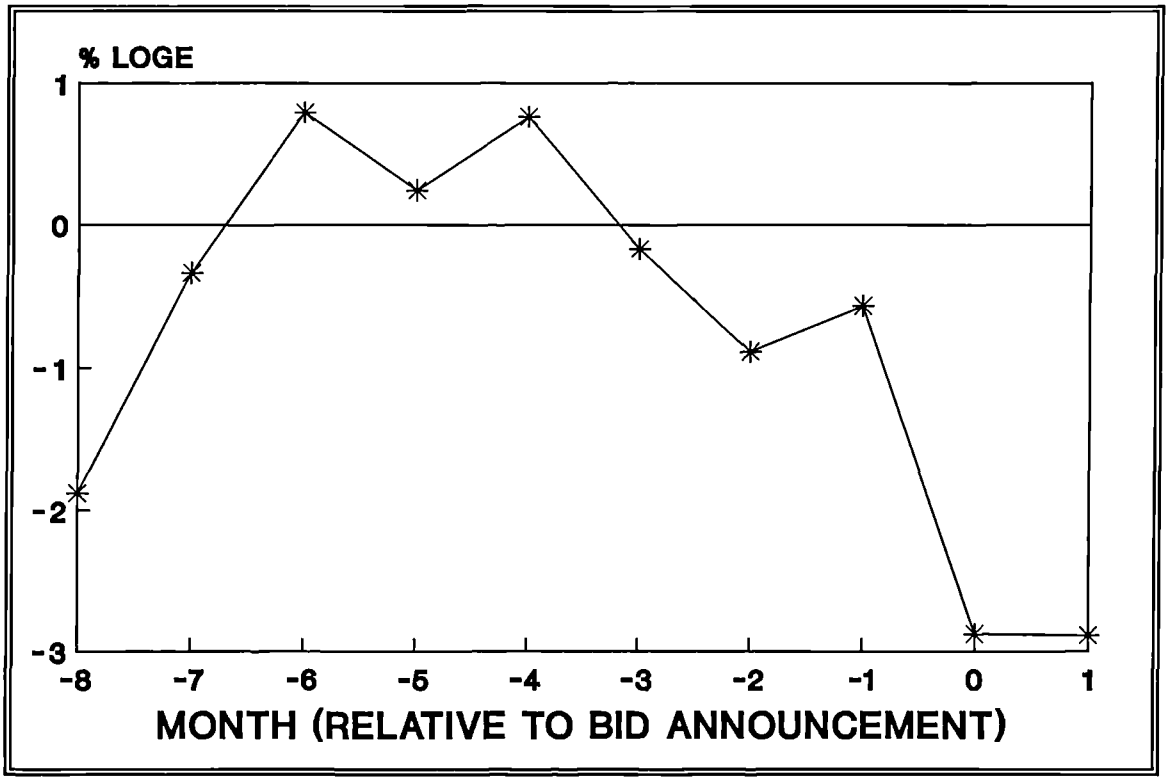
in domestic and cross-border acquisitions were insignificant.

During the month of the bid announcement, joint abnormal returns to companies in domestic acquisitions were significantly higher than those observed for cross-border

Figure 9.3.

Differences in the Average Joint Index Model Cumulative Abnormal Returns to Pairs of Target and Bidding Companies in Cross-Border and Domestic Acquisitions in the United Kingdom (1986-1991)

Average joint cumulative abnormal returns (CAR) to pairs of overseas bidding companies and listed UK target companies in cross-border acquisitions, less the CAR to bidders and targets in domestic UK acquisitions.



acquisitions[187]. Over the total analysis period from t-8 to t+1, the overall cumulative abnormal returns to targets and bidders was 2.89 percentage points higher in domestic than in cross-border acquisitions. For acquisitions in the UK during the 1986 to 1991 period, target company shareholders gained more in cross-border than in domestic acquisitions during the ten month event window (t-8, t+1). This, however, was more than offset by the inferior performance of overseas bidders, relative to that of domestic bidders, thus leading to higher wealth creation in national UK than in transnational acquisitions. The negative overall cross-border effect was not, however, statistically

187 This result is rather surprising, given that UK target companies gained marginally more in domestic than in cross-border acquisitions, and that domestic bidders lost while cross-border bidders gained during month t. The difference in results between these joint abnormal returns and the returns to targets and bidders separately (as reported in Chapters 7 and 8) may, in part, be due to the different sample sizes.

significant.

9.5.2. Cross-Sectional Analysis of Total 'Cross-Border Effect'

The cross-sectional analysis of the difference in total joint index model cumulative abnormal returns to pairs of target and bidding companies involved in respectively cross-border and domestic acquisitions (total cross-border effect) of -2.89 percentage points, is contained in Table 9.11.

The variables included in the regressions, while at times significant, were generally only successful at explaining a small amount of the cross-sectional variation in total joint cumulative abnormal returns. The maximum adjusted R^2 (when all the 8 explanatory variables are analysed together) is low, at 3.1%.

The negative cross-border effect (as captured by the 'Nationality' variable) remained statistically insignificant even when the characteristics of the bids were controlled. One exception was regression 8, where the method of payment and the existence of competition in the bidding process were controlled for. In this case, the negative cross-border effect was significant at the 80% level of significance. However, the cross-border effect was no longer significant once other explanatory variables were added to the regressions.

The overall gains were significantly higher in bids where a full cash alternative was available, compared to where only securities were offered. This is hardly surprising, given that the abnormal returns to all four groups of shareholders (targets and bidders in both cross-border and domestic acquisitions) were found to be positively influenced by the presence of a cash alternative in the offer.

Overall gains were also significantly higher in revised bids. This variable, while appearing to have a positive impact on all groups of shareholders was (as revealed in Table 8.8 in the previous chapter) only significant for domestic bidders. Marginally higher abnormal returns were also associated with competitive bids, due to the superior performance of domestic targets in such offers (see Table 7.9).

Table 9.11.

Cross-Sectional Analysis of the Difference in Total Analysis Period (t-8, t+1) Index Model Cumulative Abnormal Returns to UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions, and UK Target Companies and Domestic Bidding Companies in Domestic Acquisitions (Total Cross-Border Effect, 1986-1991)

Please see the following page for a definition of the variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.077**** (4.81)	0.072**** (4.75)	0.068**** (4.46)	0.030* (1.30)	0.071**** (4.37)	0.081**** (5.67)	0.159**** (3.32)	0.063**** (3.78)	0.062**** (3.44)	0.023 (0.91)	0.022 (0.93)	0.163**** (3.36)	0.110*** (2.21)
Nationality	-0.029 (-0.68)	-0.034 (-0.81)	-0.028 (-0.66)	-0.054 (-1.26)	-0.035 (-0.82)	-0.026 (-0.62)	-0.000 (-0.01)	-0.031 (-0.75)	-0.040 (-0.95)	-0.054 (-1.27)	-0.058* (-1.37)	0.004 (0.09)	-0.023 (-0.50)
Outcome	0.019 (0.59)							0.001 (0.02)	-0.000 (-0.01)	0.028 (0.86)			0.011 (0.32)
Competitive		0.061* (1.63)						0.044 (1.06)	0.063* (1.57)		0.060* (1.62)		0.047 (1.16)
Revised			0.085*** (2.27)					0.075** (1.94)					0.060* (1.55)
Pay				0.079**** (2.69)						0.081**** (2.76)	0.078**** (2.68)		0.085**** (2.86)
Stake					0.037 (1.22)				0.038 (1.27)				0.038 (1.27)
Rel Size						-0.0002 (-0.52)						-0.0003 (-0.68)	-0.0001 (-0.27)
Size							-0.015** (-1.71)					-0.016** (-1.77)	-0.021*** (-2.41)
Obs	388	388	388	388	388	388	388	388	388	388	388	388	388
Adj R^2	0.0%	0.3%	0.9%	1.5%	0.0%	0.0%	0.4%	0.7%	0.2%	1.4%	1.9%	0.2%	3.1%
F-value (*p*-value)	0.41 (0.665)	1.57 (0.209)	2.83** (0.060)	3.87*** (0.022)	0.98 (0.376)	0.37 (0.691)	1.71* (0.183)	1.73* (0.142)	1.19 (0.316)	2.82*** (0.039)	3.46*** (0.017)	1.29 (0.278)	2.56**** (0.010)

Table 9.11 (Continued).

t-statistics in parentheses. *, **, ***, and **** indicates value statistically significant at the 80, 90, 95 or 99 percent level of significance respectively.
The table contains regression output from analysis of the influence of various bid characteristics on the difference in average CAR to matched pairs of UK target companies and overseas bidding companies in cross-border takeover bids (cross-border acquisitions), and UK target companies and domestic bidding companies in domestic UK acquisitions (domestic acquisitions) (CAR for each pair calculated as weighted average CAR to target and bidder, weighted according to pre-bid market values). Various specifications were applied, such as (number 13) involving all the explanatory variables as follows:

$$CAR_i = \text{Constant} + \beta_1 \text{Nationality} + \beta_2 \text{Outcome} + \beta_3 \text{Competitive} + \beta_4 \text{Revised} + \beta_5 \text{Pay} + \beta_6 \text{Stake} + \beta_7 \text{Rel Size} + \beta_8 \text{Size} + \epsilon_i$$

Nationality is a dummy variable taking the value 0 if the bidder is a UK based company (domestic bid), and the value 1 if the bidder is based overseas (cross-border bid), Outcome is a dummy variable taking the value 0 if the bid was successful (in that the bidding company obtained control of the target company) and 1 if the offer failed, Competitive is a dummy variable taking the value 0 if there was a single bidder and the value 1 if more than one company bid for the target (competitive bid), Revised is a dummy variable taking the value 0 if the offer was not revised and the value 1 if the terms of the offer were revised (offer price increased), Pay is a dummy variable taking the value 0 if there was not a full cash alternative and the value 1 if the offer included a cash alternative, Stake is a dummy variable taking the value 1 if the bidding company had a stake in the target company prior to the bid announcement, and 0 otherwise, Rel Size measures the pre-bid pre-bid market value of the target divided by the pre-bid market value of the bidder, Size is the natural log of the pre-bid combined market values of the target and bidding companies, and ϵ is an error term.

Table 9.12.

Cross-Sectional Analysis of the Difference in Total Pre-Bid Period (t-8, t-2) Index Model Cumulative Abnormal Returns to UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions, and UK Target Companies and Domestic Bidding Companies in Domestic Acquisitions (Total Cross-Border Effect, 1986-1991)

Variables as defined in Table 9.11.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.014 (1.03)	0.011 (0.86)	0.012 (0.94)	-0.021 (-1.07)	0.009 (0.64)	0.016* (1.40)	0.019 (0.48)	0.008 (0.58)	0.003 (0.18)	-0.026 (-1.25)	-0.026* (-1.28)	0.021 (0.54)	-0.011 (-0.27)
Nationality	-0.008 (-0.26)	-0.010 (-0.32)	-0.008 (-0.25)	-0.027 (-0.82)	-0.014 (-0.42)	-0.006 (-0.18)	-0.008 (-0.23)	-0.010 (-0.30)	-0.015 (-0.47)	-0.027 (-0.81)	-0.028 (-0.86)	-0.004 (-0.12)	-0.022 (-0.61)
Outcome	0.013 (0.47)							0.001 (0.03)	0.000 (0.01)	0.019 (0.71)			0.010 (0.33)
Competitive		0.038 (1.22)						0.033 (0.97)	0.039 (1.19)		0.036 (1.18)		0.032 (0.94)
Revised			0.029 (0.93)					0.022 (0.68)					0.011 (0.35)
Pay				0.058*** (2.37)						0.059*** (2.43)	0.057*** (2.35)		0.058*** (2.30)
Stake					0.029 (1.19)				0.030 (1.23)				0.028 (1.13)
Rel Size						-0.0003 (-0.77)						-0.0003 (-0.77)	-0.0002 (-0.47)
Size							-0.000 (-0.06)					-0.001 (-0.13)	-0.005 (-0.67)
Obs	411	411	411	411	411	411	411	411	411	411	411	411	411
Adj R^2	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.0%	0.0%	0.3%
F-value (*p*-value)	0.15 (0.861)	0.79 (0.457)	0.47 (0.627)	2.85** (0.059)	0.74 (0.477)	0.33 (0.717)	0.04 (0.961)	0.51 (0.730)	0.77 (0.544)	2.07* (0.104)	2.36** (0.071)	0.23 (0.878)	1.15 (0.326)

Table 9.13.

Cross-Sectional Analysis of the Difference in Total Bid Period (t-1, t) Index Model Cumulative Abnormal Returns to UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions, and UK Target Companies and Domestic Bidding Companies in Domestic Acquisitions (Total Cross-Border Effect, 1986-1991)

Variables as defined in Table 9.11.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Constant	0.056**** (7.15)	0.057**** (7.67)	0.053**** (7.10)	0.041**** (3.55)	0.063**** (7.93)	0.061**** (8.71)	0.127**** (5.55)	0.048**** (5.90)	0.056**** (6.37)	0.033**** (2.70)	0.038**** (3.18)	0.125**** (5.44)	0.099**** (4.15)
Nationality	-0.019 (-0.97)	-0.021 (-1.09)	-0.019 (-0.97)	-0.030* (-1.51)	-0.019 (-0.96)	-0.022 (-1.16)	0.002 (0.11)	-0.018 (-0.94)	-0.018 (-0.95)	-0.029* (-1.48)	-0.031* (-1.56)	-0.000 (-0.02)	-0.007 (-0.35)
Outcome	0.025* (1.56)							0.018 (1.08)	0.019 (1.11)	0.029** (1.79)			0.020 (1.18)
Competitive		0.027* (1.49)						0.009 (0.45)	0.019 (0.97)		0.026* (1.45)		0.011 (0.57)
Revised			0.054**** (2.99)					0.051**** (2.72)					0.048**** (2.59)
Pay				0.031*** (2.14)						0.033*** (2.31)	0.030*** (2.11)		0.040**** (2.77)
Stake					-0.008 (-0.54)				-0.007 (-0.50)				-0.007 (-0.52)
Rel Size						0.0002 (1.16)						0.0002 (0.92)	0.0002 (1.11)
Size							-0.016**** (-3.01)					-0.012**** (-2.93)	-0.014**** (-3.40)
Obs	411	411	411	411	411	411	411	411	411	411	411	411	411
Adj R^2	0.4%	0.3%	1.9%	0.9%	0.0%	0.1%	2.0%	1.9%	0.2%	1.4%	1.2%	1.9%	5.3%
F-value (*p*-value)	1.76* (0.173)	1.65* (0.194)	5.01**** (0.007)	2.83** (0.060)	0.68 (0.507)	1.21 (0.300)	5.09**** (0.007)	2.99*** (0.019)	1.19 (0.315)	2.97*** (0.032)	2.59** (0.052)	3.67*** (0.012)	3.86**** (0.000)

Joint company size appears to have had a significantly negative impact on the overall joint abnormal returns. This variable appears to have been driven by domestic acquisitions, where both bidders and targets performed better where their combined market value was low (Table 8.8 and 7.7). However, with regard to cross-border acquisitions, Table 8.4 reveals that large overseas bidders, on average, performed better than smaller ones.

The cross-sectional analysis of the joint cross-border effect during the pre-bid period (t-8, t-2) and the bid period (t-1, t), are contained in Tables 9.12 and 9.13, respectively. During the pre-bid period, the only significant explanatory variable of the cross-sectional variation in abnormal returns, was the method of payment.

During the bid period, the cross-border effect was negative, and marginally significant (at the 80% level) in 3 of the 13 regressions. However, better explanations of the cross-sectional variation in joint abnormal returns are provided by the method of payment (with higher joint returns in cash bids), whether or not the bid was revised (with higher gains in revised bids) and the total market value of the bidders and targets (with smaller pairs performing significantly better than larger ones).

9.6. Conclusion

This chapter contains a discussion of the joint abnormal returns to pairs of target and bidding company shareholders in both cross-border and domestic acquisitions into the UK during the 1986 to 1991 period. Due to the parameter estimation problems associated with the market model and (to a lesser extent) the capital asset pricing model, the analysis in this chapter is based on the index model abnormal returns.

While overseas bidding companies, on average, experienced negative abnormal returns, these losses were more than offset by the large gains to target company shareholders. Over the time period from t-8 to t+1, joint index model cumulative

al returns in cross-border acquisitions amounted to +5.19%. These results

,est that cross-border acquisitions *created* significant shareholder wealth, although

there was also a transfer of wealth from bidding to target company shareholders. It is worth bearing in mind, however, that the overseas bidding companies (as discussed in Chapter 8) appears to have lost significantly during the period *following* the bid announcement, especially during month t+5. Due to limited post-bid data available for targets, these joint abnormal returns are restricted to the event window up until t+1. They do therefore not capture the full loss which appears to have accrued to overseas bidders as a result of their cross-border acquisitions into the UK.

In domestic UK acquisitions, both target and bidding company shareholders experienced positive index model abnormal returns over the ten month period from t-8 to t+1. When combined, the joint cumulative abnormal returns amounted to +8.08%. Thus, while UK target company shareholders gained more in cross-border than in domestic acquisitions (as discussed in Chapter 7), this positive target company cross-border effect was more than offset by the negative bidding company cross-border effect caused by the poor share price performance of the overseas bidding companies (as discussed in Chapter 8). Overall there was thus a negative joint cross-border effect, of 2.89 percentage points. This cross-border effect was not, however, statistically significant. Cross-sectional analysis revealed that abnormal returns to target and bidding company shareholders in both cross-border and domestic acquisitions were particularly large in offers where there was a full cash alternative.

CHAPTER 10

FINDINGS AND CONCLUSIONS

10.1. Summary

This chapter contains concluding remarks and a discussion of the main empirical findings obtained in this thesis, and how these results relate to the 21 hypotheses tested in this study. (The hypotheses are discussed in Chapter 5, while the empirical evidence is discussed in Chapters 7, 8 and 9).

Acquisitions in the UK during the 1986 to 1991 period resulted in large gains to target company shareholders. These gains were higher in cross-border than in domestic acquisitions, thus confirming that a target company 'cross-border effect' was present in the UK during this time period. The cross-sectional analysis suggests, however, that there is no overall target company cross-border effect once the characteristics of the bid (in particular, the method of payment) is controlled for.

The level of abnormal returns to bidders varied significantly depending on the model specification, with the market model indicating significantly lower abnormal returns than either the index model or the capital asset pricing model. The index model abnormal returns indicate that shareholders of overseas bidding companies gained somewhat during the month of the bid announcement, but experienced negative abnormal returns over the following 5 months. Domestic bidders performed exceptionally well prior to the bid announcement, but underperformed relative to the market from the bid announcement month onwards. Thus, the acquisition does appear to have had a negative impact on bidding company returns, although more so in cross-border than in domestic acquisitions, thus indicating a negative bidding company 'cross-border effect'. Analysis of joint abnormal returns to target and bidding company shareholders, revealed that the value of the abnormal returns to target company shareholders substantially exceed the losses observed by bidding company

shareholders in both cross-border and domestic acquisitions. The overall gains were higher in domestic than in cross-border acquisitions. It thus appears that acquisitions *create* significant overall shareholder wealth, although the gains to target company shareholders exceed the total wealth created. The large gains to targets result in losses to bidding company shareholders, particularly in cross-border acquisitions.

10.2. Introduction

During the late 1980s, the United Kingdom witnessed a major increase in acquisitions. A significant feature of this takeover boom, was the high (and rising) importance of cross-border acquisitions of UK companies. Despite the significant scale of cross-border acquisitions into the UK, this is an area which has so far received little attention in the existing empirical finance literature. This thesis aims to fill this gap, by analysing the impact of domestic and cross-border takeover bids for listed UK companies on the wealth of shareholder of both target and bidding companies, as well as the overall wealth effects to pairs of bidders and targets.

The study is based on an analysis of takeover bids announced on or after 1 January 1986, and for which the bid outcome was known by 31 December 1991. A total of 756 domestic and 208 cross-border bids were identified for this 6 year period. Although analysis was attempted for almost all of these bids[188], analysis of a census proved not to be possible, due to data limitations. The study centres around the level of share returns to shareholders of 1,196 companies, consisting of 71 overseas bidding companies and 143 UK target companies in cross-border acquisitions, as well as 414 domestic UK bidding companies and 568 UK targets in domestic UK acquisitions. (Data was available for both the target and bidding company shareholders in 50 of the cross-border acquisitions and 356 of the domestic UK acquisitions).

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188 As discussed in Chapter 6, partial takeover bids, bids for investment trusts, bids for water companies, joint bids and second bids by the same bidding company for the same target company within a 12 month period, were excluded from the analysis.

Previous studies (e.g., Franks and Harris (1989), Limmack (1991)), have indicated that the choice of event study methodology may have an impact on the level of estimated abnormal returns (which is a measure of shareholder wealth effects). Consequently, in this study, 3 different test models are applied. These are the capital asset pricing model (CAPM), the market model (MM), and the index model (IM)[189]. CAPM and MM parameters are estimated using monthly data for the time period from month t-68 to month t-9, where t refers to the month of the bid announcement. Previous research (e.g., Franks *et al.* (1977)) has indicated that share prices (particularly of target companies) start rising several months prior to the bid announcement. Research has also indicated that abnormal returns may accrue to bidding company shareholders during an extended period following the bid announcement (e.g., Franks and Harris (1989) and Limmack (1991)). Thus, in order to capture the full wealth effect from acquisitions, long event windows are required. (There is a trade-off, however, as long event windows exacerbate the difficulties relating to data availability and imprecise parameter estimation. This is discussed further in Chapter 6). Consequently, fairly long event-windows are applied in this study, with cumulative abnormal returns, using all models, estimated for target company shareholders over a ten month period from t-8 to t+1, and for bidding company shareholders over a fourteen month period from t-8 to t+5[190].

In the existing literature, several explanations have been offered as to why the level of abnormal returns to target and/or bidding company shareholders may be systematically different in domestic and cross-border acquisitions. These theories (as discussed in Chapter 2) relate to product market imperfections, government intervention and regulatory policies (in particular with regard to market access and taxation), capital market imperfections (regarding exchange rates and price/earnings

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189 For all three models, market returns are (as discussed in Chapter 6) calculated as the change in level of the stock market index in the company's *home* market.

190 The event windows are different for bidding and target companies due to the limited return data generally available for target company shareholders following the bid announcement.

ratios), segmented takeover markets and international risk diversification. While these factors provide possible motives for cross-border acquisitions, empirical testing of these factors is subject to limitations, as the factors are generally not mutually exclusive, and causation can generally not be established. Consequently, the main aim of this thesis is to determine the level of abnormal returns to shareholders from cross-border and domestic acquisitions and, in particular, to establish whether there are *differences* in the levels of abnormal returns associated with cross-border and domestic acquisitions ('cross-border effects'). This thesis does not attempt to empirically test the various theories put forward in the literature as possible causes of such cross-border effects[191].

Chapter 3 contains a review of key literature on domestic acquisitions, with regard to the methodology adopted and the results obtained, while a discussion of the literature on cross-border acquisitions is contained in Chapter 4. The existing literature overwhelmingly confirm that target company shareholders gain significantly in both cross-border and domestic acquisitions. Previous research, predominately relating to the US market, has indicated that target company shareholders tend to gain more when the predator company is based abroad (see Table 4.2). This has become known as the target company 'cross-border effect'. No analysis appear to have been undertaken, prior to this one, to establish whether a similar target company cross-border effect has been present in the UK.

The evidence with regard to the level of abnormal returns to bidding company shareholders in either domestic or cross-border acquisitions is mixed, with some studies reporting large gains and other studies reporting large losses (see Tables 3.1 and 4.1). This thesis include an analysis of the level of abnormal returns to cross-border and domestic bidders, as well as an analysis of the differences in the level of abnormal returns to shareholders of overseas and UK bidders. In addition, the joint

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191 However, as discussed below, bid specific factors which may have an impact on the level of abnormal returns (such as the outcome of the bid, whether the bid was competitive, or revised, the method of payment, the presence of toeholds, the relative size of the target and bidding companies, as well as the size of the company being analysed) are controlled for when analysing the cross-border effects.

abnormal returns to pairs of target and bidding company shareholders in both cross-border and domestic acquisitions are analysed.

The 21 hypotheses tested in this study are discussed in Chapter 5, while the methodology applied (and the methodological difficulties encountered, such as parameter estimation and 'thin' trading, stock market size effects, and difficulties in estimating the abnormal returns to bidding company shareholders) is discussed in Chapter 6. As mentioned above, previous literature, predominately based on the US market, has established that target company shareholders generally gain more from cross-border than from domestic acquisitions. This thesis aims to test whether a similar target company cross-border effect was present in the UK during the 1986 to 1991 period. In addition, the study aims to establish whether bidding company shareholders gained or lost as a result of the takeover bids, and whether these abnormal returns were different in cross-border and domestic acquisitions. The thesis also aims to establish whether the takeover bids *overall* were value creating, by analysing the joint abnormal returns to target and bidding company shareholders. Previous research has indicated that the characteristics of the bid may have an impact on the level of the abnormal returns. Consequently, a number of variables are controlled for in the cross-sectional analysis. These variables are; whether the bid was cross-border or domestic (nationality), whether the bid was successful or failed (outcome), whether there were more than one company bidding for the target company (competitive), whether the terms of the offer were improved (revised), whether or not the offer included a full cash alternative (pay), whether or not the bidding company held shares in the target company prior to bid announcement (stake), the relative size (as measured by the pre-bid market value of equity) of the target and bidding companies and finally, the size of the company being analysed.

10.3. Findings and Conclusions

The empirical results obtained in this thesis are discussed in three chapters;

Chapter 7 (target company shareholders), Chapter 8 (bidding company shareholders) and Chapter 9 (joint abnormal returns to target and bidding company shareholders). The main findings of the thesis, and how this relates to the 21 hypotheses, are discussed below.

The first hypothesis relate to whether shareholders of UK target companies gain from takeover bids by overseas companies:

Hypothesis 1 - Cross-Border Target Companies

H_0CT No abnormal returns accrued to shareholders of target companies in cross-border acquisitions into the UK.

H_1CT Significant abnormal returns (positive or negative) accrued to shareholders of target companies in cross-border acquisitions into the UK.

The empirical evidence for the UK during the 1986-1991 period (discussed in section 7.2), reject the null hypothesis. UK target companies in cross-border acquisitions, on average, significantly underperformed prior to becoming takeover targets. However, significant positive abnormal returns were observed from month t-2 onwards (where t refer to the month of the bid announcement). Cumulative abnormal returns over the event window from eight months prior to, to one month after the month of the bid (t-8, t+1) to shareholders of UK target companies in cross-border acquisitions were highly significant (at better than the 99% level), and amounted to +20.21% with the IM, +25.27% with the CAPM, and +26.98% with the MM. These high gains to target company shareholders are consistent with previous literature, as discussed in Chapter 4.

The second hypothesis tested relate to abnormal gains or losses to shareholders of UK companies targeted in domestic acquisitions:

Hypothesis 2 - Domestic Target Companies

H_0DT No abnormal returns accrued to shareholders of target companies in domestic UK acquisitions.

H_1DT Significant abnormal returns (positive or negative) accrued to shareholders of target companies in domestic UK acquisitions.

The results obtained in this thesis (section 7.3) reject the null hypothesis. Statistically significant (at better than the 99% level) positive average cumulative abnormal returns of +17.71% with the IM, +19.12% with the CAPM, and +16.66% with the MM, were earned by shareholders of listed UK companies targeted in domestic acquisitions.

As summarised in Table 4.2, the majority of the existing literature on target companies in cross-border acquisitions, based predominately on US data, have indicated that gains are higher in cross-border than in domestic acquisitions.

Hypothesis 3 relates to whether a similar target company cross-border effect was present in the UK during the 1986-1991 period:

Hypothesis 3 - Target Companies 'Cross-Border Effect'

$H_0CT\ effect$ There were no differences in the level of abnormal returns to UK target company shareholders in domestic and cross-border acquisitions.

$H_1CT\ effect$ There were significant differences in the level of abnormal returns to UK target company shareholders in domestic and cross-border acquisitions.

The analysis (in section 7.4) revealed that target company shareholders gained more in cross-border than in domestic acquisitions. The difference in mean abnormal returns to targets in cross-border and domestic acquisitions was +2.50 percentage points with the IM, +6.15 percentage points with the CAPM, and +10.31 percentage points with the MM. While positive, the overall target company cross-border effect was only statistically significant (at the 90% level) with the market model. However, when variations in the characteristics of the bids are controlled for in the cross-sectional

analysis (a discussion of the cross-sectional variables is provided below in hypotheses 15 to 21), some of the regressions indicated that the index model cross-border effect was significant (at the 80% level). Thus, while not highly significant, there is sufficient evidence to suggest that there was a positive target company cross-border effect in the UK during the 1986-1991 period. The null hypothesis is therefore rejected.

The overall cumulative abnormal returns to UK target companies in cross-border acquisitions, confirmed that significant gains accrue to the target companies in cross-border acquisitions. There is a possibility, however, that the level of target company abnormal returns are influenced by the nationality of the overseas bidding company, as covered by hypothesis 4:

Hypothesis 4 - Cross-Border Target Companies - Nationality of Bidders

H_0CT nat No differences in abnormal returns to shareholders of UK target companies in cross-border acquisitions were associated with the nationality of the overseas bidders.

H_1CT nat Significant differences in abnormal returns to shareholders of UK target companies in cross-border acquisitions were associated with the nationality of the overseas bidders.

In this study, the 143 cross-border takeover bids for UK listed companies were made by companies based in 22 different countries. Due to the small number of observations for some countries, the bids were classified according to whether the bidder was based in the EC, in non-EC European countries, in the US, or elsewhere. The analysis (in section 7.2.2) revealed that gains to target shareholders in intra-EC acquisitions, while (insignificantly) positive, were significantly lower than gains to targets bid for by companies based outside the Community. These findings reject the null hypothesis in favour of the alternative. The variation in abnormal returns depending on the nationality of the bidding company are consistent with a market entry argument, although an explicit testing of this theory was not possible.

Previous research (e.g., Franks *et al.* (1977)) found the share price of target companies to rise significantly several months prior to the official bid announcement. Biswas (1990) suggested that the possibility of bid leakage is higher in cross-border than in domestic acquisitions. This is tested in hypothesis 5, which relate to whether cross-border acquisitions were more or less of a surprise to the stock market than were domestic acquisitions:

Hypothesis 5 - Timing of Target Company Bid Rumour

H_0T timing There were no differences between domestic and cross-border acquisitions with regard to the length of time prior to the bid announcement at which target company share price rise.

H_1T timing The length of time prior to the bid announcement at which target company share price rose differed between domestic and cross-border acquisitions.

In cross-border acquisitions, while negative abnormal returns were generally observed for months t-8 to t-3, significant positive abnormal returns were observed as early as two months prior to the month of the bid announcement. In domestic acquisitions, target company returns were close to zero during month t-3, and (with the IM and MM) significantly positive during t-2[192]. Thus, with monthly data, there is no discernible difference between cross-border and domestic acquisitions with regard to the timing of bid rumours. During the 1986 to 1991 period, share prices of UK target companies tended to rise significantly two months prior to the bid announcement month in both domestic and cross-border acquisitions.

The sixth hypothesis related to the pre-bid performance of the target companies. Following Davis (1995), it was hypothesised that overseas bidders, due to the distance to head office, would tend to target companies which had performed well (as measured by their share performance), while leaving weaker targets to domestic

192 Possible causes for the pre-bid increase in the target company share price include bid speculation, insider trading and the building of a stake in the target company by the bidding company prior to the official bid announcement. The effect of pre-bid stakes is explored further in hypothesis 19.

predators:

Hypothesis 6 - Pre-Bid Performance of Targets

$H_0T_{pre\text{-}bid}$ There were no differences in pre-bid performance between target companies in domestic and cross-border acquisitions.

$H_1T_{pre\text{-}bid}$ There were significant differences (positive or negative) in the pre-bid performance of target companies in domestic and cross-border acquisitions.

The results reject the null hypothesis. Indeed, contrary to expectations, UK target companies bid for by overseas bidders (as discussed in section 7.4) performed *worse* (significant with the index model) over the early pre-bid period (t-8, t-3).

Turning to the abnormal returns to shareholders of bidding companies, the literature on both domestic and cross-border acquisitions (as discussed in Chapters 3 and 4) is inconclusive with regard to whether these shareholders gain or lose from takeover activity.

The empirical evidence with regard to the level of abnormal returns to shareholders of the overseas bidding companies (as discussed in section 8.2.1) was tested against the following hypotheses:

Hypothesis 7 - Cross-Border Bidding Companies

H_0CB No abnormal returns accrued to shareholders of overseas bidding companies in cross-border acquisitions into the UK.

H_1CB Significant abnormal returns (positive or negative) accrued to shareholders of overseas bidding companies in cross-border acquisitions into the UK.

During the month of the bid announcement, shareholders of overseas bidding companies gained (+0.80% with the index model, +1.43% with CAPM (significant at the 80% level) and +0.23% with the market model). However, these shareholders encountered large negative abnormal returns over the period following the bid announcement. The average cumulative abnormal returns over the whole event

window (t-8, t+5) amounted to -5.34% with the index model (significant at the 80% level), -3.55% with CAPM, and -16.46% with the market model (significant at the 99% level). These results indicate that while the short term impact of the acquisition was positive, overseas bidders underperformed following the bid announcement. Thus, these cross-border acquisitions do not appear to have created wealth for the bidding company shareholders.

The results also highlight two important methodological issues, regarding the length of the event window and the choice of analysis model. As indicated above, shareholders of overseas bidding companies experienced significant negative abnormal returns during the period following the bid announcement. As discussed in section 6.5.4, various theories have been put forward as possible causes for such post-announcement 'drift', such as the release of new information (e.g., announcements of competitive bids, bid outcome, etc), overpayment but slow share price reaction due to inefficient markets, and model misspecification. While there may be some merit in each of these theories, none of them can fully explain the post-bid negative abnormal returns. Thus, the cause of the drift still eludes us. However, if these post-bid abnormal returns are attributable to the acquisitions (and there appear to be no compelling evidence to refute this), short event windows (as frequently used, particularly in studies based on the US market) will not capture the whole wealth effect.

A second, related issue, regards the choice of event study model. For both cross-border and domestic bidders (see discussion to hypothesis 9 below), market model abnormal returns are substantially lower than those observed using either the index model or the capital asset pricing model. This is due to the high mean α (constant) values for bidding companies, caused (despite the long parameter estimation period) by bidding companies performing exceptionally well during the parameter estimation period. The α terms imply that over the event window from t-8 to t+5, cross-border and domestic bidders are, on average, expected to earn a rate of return of 11.48% and 13.48%, respectively, *in addition to* the rate of return commensurate with the

company's level of systematic risk. Overseas bidding companies were not able to maintain this excess performance during the period following the bid, and as indicated by the index model, also underperformed relative to the stock market index in their home market. Due to the problems associated with the estimation of the market model α values, as well as the mean market model and capital asset pricing model β values being substantially below 1, it is believed that the index model provide the most appropriate benchmark against which to evaluate the returns to bidding company shareholders.

As discussed above under hypothesis 3, the nationality of the cross-border bidder had a significant impact on the level of abnormal returns to target company shareholders. Hypothesis 8, discussed next, relates to whether the level of abnormal returns to shareholders of cross-border bidders varied with the nationality of the bidding company:

Hypothesis 8 - Nationality of Cross-Border Bidding Companies

H_0CB nat No differences in abnormal returns to overseas bidding companies in cross-border acquisitions into the UK were associated with the nationality of the bidder.

H_1CB nat Significant differences in abnormal returns to overseas bidding companies in cross-border acquisitions into the UK were associated with the nationality of the bidder.

The level of abnormal returns to shareholders of overseas bidders varied significantly depending on the region in which the bidding company was incorporated (as discussed in section 8.2.2), thus rejecting the null hypothesis. The level of total abnormal returns (for event window t-8, t+5) to US bidding companies averaged exactly the same as the overall index model sample mean of -5.34% (not statistically significant). However, the performance of overseas companies based in European

countries which were not part of the European Community[193] was substantially lower, at -17.19% (significant at the 80% level), although the difference in mean was not statistically significant. Bidding companies based outside of Europe or the US on average *gained* +5.32%, although this was not statistically significant.

While shareholders of overseas bidding companies, on average, lost as a result of the cross-border acquisitions of UK companies, the results regarding the level of abnormal returns to shareholders of domestic bidders, as discussed next, are more ambiguous.

Hypothesis 9 - Domestic Bidding Companies

H_0DB No abnormal returns accrued to shareholders of bidding companies in domestic UK acquisitions.

H_1DB Significant abnormal returns (positive or negative) accrued to shareholders of bidding companies in domestic UK acquisitions.

The level of abnormal returns to shareholders of domestic bidding companies are (as discussed in section 8.3.1) highly dependent on which test model is used. As explained above, the substantial difference in results were due to the high market model α values. Over the period up until the bid announcement, domestic bidding companies outperformed the market, as they had done during the parameter estimation period. Cumulative abnormal returns from t-8 to t-1 amounted to +8.05% with the index model (significant at the 99% level), +8.73% with CAPM (also significant at the 99% level) and +1.21% with the market model. At the time of the bid announcement, there was, however, a substantial deterioration in the average share performance of the domestic bidders. During the bid announcement month, shareholders in domestic bidders lost according to all three models (-0.19% with the index model, -0.22% with CAPM and -1.11% with the market model (significant at the 99% level)). Over the post-bid period, domestic bidders in general continued to

193 The membership of the European Community (European Union) in this study is taken to be the 12 countries which were members during the period of study. Sweden, Austria and Finland joined the EU after the period in question, and has in this study thus been classified as non-EU countries.

underperform, with mean post-bid (t+1, t+5) cumulative abnormal returns amounting to -1.07% with the index model, -0.67% with CAPM and -5.52% with the market model (significant at the 99% level). Thus, while domestic bidders performed well *prior* to the bid announcement, abnormal losses were incurred at, and subsequent to, the time of the bid announcement. The overall CAR, taking into account both the pre-bid and post-bid abnormal returns (t-8, t+5) amounted to +6.79% with the index model and +7.84% with the capital asset pricing model (both significant at the 99% level) and -5.42% with the market model (significant at the 95% level).

As discussed under hypothesis 4, it was established that UK target company shareholders encountered higher abnormal returns in cross-border than in domestic acquisitions. The extent to which differences in shareholder returns between cross-border and domestic acquisitions also apply to bidding companies (bidding company cross-border effects), was analysed next:

Hypothesis 10 - Bidding Companies 'Cross-Border Effect'

H_0CB effect No differences in abnormal returns to overseas and UK bidding companies in cross-border and domestic acquisitions were present.

H_1CB effect Abnormal returns to overseas bidding companies in cross-border acquisitions and UK bidding companies in domestic acquisitions were significantly different.

While the three different test models produced different results with regard to the *level* of abnormal returns to shareholders of bidding companies, the models provide surprisingly consistent results with regard to the *difference* in the level of abnormal returns to cross-border and domestic bidders. With all three models, overseas bidders performed better during the bid month than domestic bidders, with the cross-border effect for this month amounting to +0.99% with the index model, +1.66% with CAPM (significant at the 80% level) and +1.34% with the market model. However, both prior to and subsequent to the bid announcement, shareholders of overseas bidders

obtained substantially lower abnormal returns than did shareholders of domestic UK bidding companies. Over the total analysis period from t-8 to t+5, the difference in the mean total cumulative abnormal returns to cross-border and domestic bidders (bidding company cross-border effect) amounted to -12.13% with the index model (significant at the 99% level), -11.39% with CAPM (significant at the 95% level) and -11.04% with the market model (significant at the 90% level). Thus, the high abnormal returns to shareholders of UK target companies in cross-border acquisitions relative to those observed for domestic targets, appear to have been caused by overpayment, with overseas bidders performing significantly worse than domestic UK bidders.

The empirical evidence discussed so far relate to the extent to which bidding or target company shareholders gain from either cross-border or domestic acquisitions. The following four hypotheses relate to whether the acquisitions *overall* created shareholder wealth. These hypotheses are tested (as discussed in Chapter 9) by analysing the percentage index model joint abnormal returns to shareholders of pairs of target and bidding companies[194].

Firstly, the joint abnormal returns to shareholders in 50 pairs of target and bidding companies engaged in cross-border acquisitions was analysed:

Hypothesis 11 - Cross-Border Acquisitions

H_0C No joint abnormal returns accrued to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK.

H_1C Significant joint abnormal returns (positive or negative) accrued to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK.

As discussed under hypotheses 1 and 7 above, while shareholders of UK targets gained significantly in cross-border acquisitions, the overseas bidding companies

194 Due to bidding companies generally being substantially larger than target firms, the cumulative abnormal returns for each pair has been weighted according to the pre-bid market values of the target and bidding companies as follows: $[(CAR_{Bidder} * MV_{Bidder}) + (CAR_{Target} * MV_{Target})] / (MV_{Bidder} + MV_{Target})$.

underperformed during the period surrounding the bid. The overall joint wealth effect indicate that, while resulting in a transfer of wealth from bidding to target company shareholders, cross-border acquisitions also *created* significant shareholder wealth. Highly positive joint abnormal returns were observed for months t-1 and t (of +1.69% and +2.45%, respectively), and the total index model abnormal returns (t-8, t+1) amounted to +5.19%, significant at the 95% level.

As discussed above (under hypotheses 3 and 8), the nationality of the overseas bidding company appear to have had a significant impact on the level of abnormal returns to shareholders of both targets and bidders. The effect on the joint abnormal returns of the nationality of the overseas bidding companies was analysed next:

Hypothesis 12 - Nationality of Bidder in Cross-Border Acquisitions

H_0C_{nat} No differences in joint abnormal returns to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK were associated with the nationality of the overseas bidder.

H_1C_{nat} Significant differences in joint abnormal returns to shareholders of overseas bidding and domestic UK target companies in cross-border acquisitions into the UK were associated with the nationality of the overseas bidder.

The empirical evidence (as summarised in Table 9.4 in the previous chapter) reveal strong differences in joint cumulative abnormal returns depending on the nationality of the overseas bidding company, thus rejecting the null hypothesis. The total abnormal returns (t-8, t+1) were marginally *negative* in cross-border acquisitions by companies based in other EC states, while acquisitions by bidders based in other European countries also resulted in low (although positive) joint abnormal returns. Acquisitions by US bidders resulted in large overall gains (+6.33%, significant at the 80% level), while acquisitions by companies based outside of Europe or the US resulted in significant overall gains (+11.55%, significant at the 95% level). The cause

of such large variations in overall abnormal returns depending on the nationality of the cross-border bidding company, is an area which warrants further research.

The overall abnormal returns to 356 pairs of target and bidding company shareholders in domestic acquisitions were similarly analysed in order to establish the total wealth effect of domestic acquisitions in the UK during the 1986-1991 period.

Hypothesis 13 - Domestic Acquisitions

H_0D No joint abnormal returns accrued to shareholders of bidding and target companies in domestic acquisitions into the UK.

H_1D Significant joint abnormal returns (positive or negative) accrued to shareholders of bidding and target companies in domestic acquisitions into the UK.

As discussed in section 9.3.1, significant positive index model joint abnormal returns in domestic acquisitions were observed as early as two months prior to the month of the bid announcement, with abnormal returns for month t-2 amounting to +0.9% (significant at the 95% level). Further highly significant gains were observed for months t-1 and t, of +1.37% and +4.76%, respectively (both significant at the 99% level). Thus, while bidding company shareholders lost during the month of the bid announcement, these losses were more than offset by the substantial gains to target company shareholders. Over the whole analysis period (t-8, t+1), joint abnormal returns to pairs of target and bidding company shareholders amounted to +8.08%, significant at the 99% level. Thus, based on the index model abnormal returns, domestic acquisitions, on average, appear to have created significant shareholder wealth.

As discussed above (under hypotheses 4 and 10), the research has revealed a positive target company cross-border effect and a negative bidding company cross-border effect. Next was analysed the difference in the joint abnormal returns to target and bidding company shareholders in cross-border and domestic acquisitions (the total joint cross-border effect). The null and the alternative hypotheses are as follows:

Hypothesis 14 - Total Joint 'Cross-Border Effect'

H_0C effect No differences in joint abnormal returns to pairs of target and bidding companies were observed between domestic and cross-border acquisitions.

H_1C effect Abnormal returns to pairs of target and bidding companies were significantly different in domestic and cross-border acquisitions.

While target company shareholders gained more in cross-border than in domestic acquisitions, the positive target company cross-border effect was more than offset by the poor performance of the overseas bidding companies. Over the total analysis period (t-8, t+1), the average index model cumulative abnormal returns to pairs of target and bidding company shareholders was 2.89 percentage points lower in cross-border than in domestic acquisitions, thus indicating a negative cross-border effect. Although the overall negative cross-border effect was not statistically significant, a few of the regressions in the cross-sectional analysis (where the different bid characteristics were controlled for), the negative cross-border effect was found to be marginally significant (at the 80% level). There is thus some evidence to suggest that, despite the positive target company cross-border effect, overall joint abnormal returns to targets and bidders were lower in cross-border than in domestic acquisitions.

Cross-sectional analysis is undertaken in order to control for the characteristics of the individual bids. As discussed in Chapter 5, the literature suggests several factors which may have an impact on the level of abnormal returns. The variables analysed in this study are the outcome of the bid, the existence of competition in the bid, whether the terms of the offer were revised, the method of payment, the presence of pre-bid stakes, the relative size of the target and bidding companies and the size of the company analysed[195]. In the cross-sectional analysis, the cumulative abnormal returns are analysed for the whole event period (from t-8 to t+1 for targets

195 In the discussion below, the statistical significance levels reported refer to the highest level of significance for the explanatory variable in the cross-sectional regressions. A total of 13 different regressions were used, and the level of significance may have been lower in some of the regressions.

and from t-8 to t+5 for bidders, where t refers to the month of the bid announcement), as well as for the pre-bid period (t-8, t-2), the bid period (t-1, t), and the post-bid period (t+1, t+5)[196]

With regard to whether the success or failure of the bid had an impact on the level of abnormal returns, the null and alternative hypotheses are as follows:

Hypothesis 15 - Bid Outcome

H_0 outcome There were no differences in the level of abnormal returns to companies (target, bidding and joint) in successful and failed acquisitions.

H_1 outcome Abnormal returns were significantly different to companies (target, bidding and joint) in successful and failed acquisitions.

Over the whole event period (from t-8 to t+1), target company shareholders in domestic acquisitions gained significantly (at the 95% level) more in successful than in failed bids. Whether the bid succeeded or failed does not, however, appear to have had a significant impact on the level of abnormal returns to target company shareholders in cross-border acquisitions.

With regard to bidding company shareholders, domestic bidders performed better (at the 80% level of significance) over the whole event period window (t-8, t+5) in failed than in successful bids. Overseas bidders performed better during the bid period (t-1, t) in failed than in successful bids, although the reverse was true during the post-bid period (t+1, t+5). Over the whole event period (t-8, t+5), the outcome of the bid had no significant impact on the level of abnormal returns to overseas bidders.

Overall, the empirical results thus reject the null hypothesis, in favour of the alternative, as shareholders of domestic targets gain more and shareholders of domestic bidders gain (over the event period from t-8 to t+1) less in successful than in failed bids.

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196 Due to limited data being available for target companies after the period of the bid announcement, the total analysis period fro target companies is shorter than that for bidding companies. Analysis of post-bid returns (t+1, t+5) was thus only possible for bidding companies.

The next hypothesis tested relate to the existence of competition in the bid:

Hypothesis 16 - Competition in Bid

$H_{0\ competitive}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) in single bidder and multiple bidder (competitive) acquisitions.

$H_{1\ competitive}$ Abnormal returns were significantly different to companies (target, bidding and joint) in single bidder and multiple bidder (competitive) acquisitions.

The empirical evidence obtained in this thesis reject the null hypothesis with regard to the abnormal returns to shareholders of domestic target and overseas bidding companies. Target company shareholders in domestic acquisitions gained significantly more (at the 99% level of significance) in competitive than in single-bidder offers. Overseas bidding company shareholders, however, encountered significantly (at the 90% level of significance) lower abnormal returns in competitive than in uncompetitive bids. The number of bidders was, rather surprisingly, not found to have had a significant impact on the level of abnormal returns to shareholders of either domestic bidders or target companies subject to cross-border acquisitions.

The next variable analysed relate to whether or not the revision of bid terms had a significant impact on shareholders wealth. The hypotheses are as follows:

Hypothesis 17 - Revision of Bid Terms

$H_{0\ revision}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) in revised and unrevised offers.

$H_{1\ revision}$ Abnormal returns were significantly different to companies (target, bidding and joint) in revised and unrevised offers.

In this study, shareholders of target companies subject to domestic takeover bids were found to have gained more in revised bids during the bid period (t-1, t), even though some of the bid revisions took place after the month of the bid announcement.

The empirical evidence thus reject the null hypothesis. However, the variable had no significant impact on the overall event period (t-8, t+1) abnormal returns. Similarly, revision of bid terms had no significant impact on target company returns in cross-border acquisitions. However, when analysing all target companies together, the overall (t-8, t+1) abnormal returns were found to be significantly higher (at the 90% level) in revised than in unrevised bids. Bid revision thus appears to have had some positive impact on target company returns.

Domestic bidders performed significantly better (at the 95% level) in revised bids, while the level of abnormal returns to overseas bidders was not significantly affected by whether or not the bid was revised.

Hypothesis 18 relate to the method of payment, and proved to be the single most important explanatory variable in the cross-sectional analysis of abnormal returns. The null and alternative hypotheses are as follows:

Hypothesis 18 - Method of Payment

$H_{0\ pay}$ There were no differences in the level of abnormal returns to companies (target, bidding and joint) depending on whether or not the offer includes a full cash alternative

$H_{1\ pay}$ Abnormal returns were significantly different to companies (target, bidding and joint) depending on whether the offer includes a full cash alternative.

The method of payment was found to have had a major impact on the level of abnormal returns to all categories of companies. In domestic acquisitions, both targets and bidders obtained significantly higher abnormal returns (significant at the 99% level) where the offer included a full cash alternative, compared to where no such cash offer was available. Cash offers also resulted in higher abnormal returns to targets and bidders in cross-border acquisitions, although the level of significance was lower (at the 80% and 95% level, respectively), due to the small number of cross-border acquisitions not involving cash payment.

Walkling and Edminster (1985) predicted that target company returns would be lower and bidding company returns higher, where the bidding company held shares in the target prior to the bid announcement. This was tested next, with the null and alternative hypotheses as follows:

Hypothesis 19 - Pre-Bid Stake

H_0 stake There were no differences in the level of abnormal returns to companies (target, bidding and joint) depending on whether or not the bidder held a pre-bid stake in the target.

H_1 stake Abnormal returns were significantly different to companies (target, bidding and joint) depending on whether or not the bidder held a pre-bid stake in the target.

Consistent with Walkling and Edminster's expectations, domestic targets gained somewhat less (at the 80% level of significance) during the bid period (t-1, t) where the bidder held a toehold in the target. However, shareholders in domestic target companies in which the bidder held shares at the time of the bid announcement, performed significantly better during the pre-bid period (t-8, t-2) than did the other target companies. Overall (t-8, t+1), the presence of pre-bid stakes had a positive impact on the abnormal returns to target company shareholders in domestic acquisitions, although only significant at the 80% level of significance. The presence of pre-bid stakes does not appear to have had a significant impact on the level of abnormal returns to target company shareholders in cross-border acquisitions.

Overseas bidders gained more (at the 90% level) during the bid-period if they held a pre-bid toehold in the target, although the effect was not significant for the overall event window (t-8, t+5). Domestic bidders performed overall better (at the 80% level of significance) where they held a pre-bid stake.

Hypothesis 20 relate to the difference in pre-bid market values of the target and bidding companies:

Hypothesis 20 - Relative Size of Targets and Bidders

H_0 rel size The level of abnormal returns to companies (target, bidding and joint) were unaffected by the relative size of the target and bidding companies.

H_1 rel size The level of abnormal returns to companies (target, bidding and joint) varied significantly depending on the relative size of the target and bidding companies.

The empirical results indicate that acquisitions of relatively large target companies (relative to the size of the bidder) had a positive impact (significant at the 95% level) on bidding company shareholder returns in cross-border acquisitions into the UK during the 1986-1991 period in comparison to relatively small acquisitions. This finding is consistent with the observations made by Feils (1993) for cross-border acquisitions, and Asquith *et al.* (1983), Jarrell and Poulsen (1989) and Peterson and Peterson (1991) for domestic acquisitions in the US. UK bidders in domestic acquisitions performed better during the bid-period (t-1, t) in relatively large acquisitions. However, during the post-bid period (t+1, t+5), UK bidders engaged in such large acquisitions performed worse than companies buying relatively small targets. Thus, overall (t-8, t+5), the relative size of the target and bidding companies had no significant impact on the level of abnormal returns to shareholders of UK bidding companies engaged in domestic acquisitions. The relative size of the targets and bidders does not appear to have had any significant impact on the level of abnormal returns to target company shareholders in either domestic or cross-border acquisitions.

The final variable controlled for relate to the size of the company. Several studies (as discussed in section 6.5.2) have found companies with low market capitalisations to outperform larger ones. This has become known as the 'size effect'. In order to control for a possible size effect, the impact of company size on abnormal returns has been analysed. The hypotheses relating to this variable are as follows:

Hypothesis 21 - Size of Company

$H_{0\ size}$ The level of abnormal returns to companies (target, bidding and joint) were unaffected by their size (as measured by pre-bid market value)

$H_{1\ size}$ The level of abnormal returns to companies (target, bidding and joint) varied significantly depending on their size (as measured by pre-bid market value).

The results with regard to the impact of company size are mixed. Shareholders of small domestic bidding companies obtained significantly (at the 95% level) higher cumulative abnormal returns for the whole event window (t-8, t+5) than did shareholders in larger bidders. (However, large domestic bidders outperformed smaller ones during the post-bid (t+1, t+5) period). In cross-border acquisitions, large bidders performed significantly better (at the 99% level) than smaller cross-border bidders.

With regard to target company shareholders, their percentage abnormal returns in domestic acquisitions were significantly higher (at the 95% level) the lower the pre-bid market value of the target company. In cross-border acquisitions, target shareholder returns during the bid period (t-1, t) were also higher for small targets, although large companies performed better than smaller ones during the period prior to being the subject of a cross-border takeover bid. Overall (t-8, t+1), company size had no significant impact on target company shareholder returns in cross-border acquisitions. Overall, there is thus some evidence to reject the null hypothesis, although the size effect does not appear to apply to all categories of companies.

Takeover activity in the UK during the 1986 to 1991 period resulted in large gains to shareholders of listed UK target companies. These gains were particularly large in cross-border acquisitions. The positive target company cross-border effect was similar to that observed in previous literature regarding the US market. The cause of the

target company cross-border effect is not yet fully known, although it appears to be associated with the nationality of the cross-border bidding company. In addition, the target company cross-border effect is no longer present once the method of payment is controlled for. The cause of the cross-border effects, and the impact of country-specific factors, are areas which warrant further research.

While target company shareholders gained significantly from acquisitions, shareholders of bidding companies on average lost, in particular during the months following the bid announcement. While one should be careful not to infer *ex ante* motives from *ex post* results, the negative (post-bid) abnormal returns to bidding company shareholders in domestic and even more so in cross-border acquisitions, raise questions regarding the merit of these transactions. Based on share return data, it appears that bidding companies (and in particular, overseas bidders) paid too high a price for the target companies. While the acquisitions overall created significant shareholder wealth, the gains to target company shareholders exceeded this total gain, thus leading to a deterioration of wealth for the average bidding company shareholder. Further research is required to establish why acquisitions take place despite the poor returns on average incurred by bidding company shareholders.

APPENDIX A - Table A.1

SAMPLE OF CROSS-BORDER ACQUISITIONS INTO THE UNITED KINGDOM (1986-1991)

	TARGET COMPANY	MARKET[A] CAP TARGET £M	SAMPLE[D]	BIDDING COMPANY	MARKET[B] CAP BIDDER £M	SAMPLE	NATIO-NALITY[C]	ANNOUNCE-MENT DATE
1	**Watson, R Kelvin**	3	C	Cooper Vision	*	*	US	860117
2	**Groupe Lotus**	19	C	**General Motors**	17,583	C	US	860122
3	**Smith St Aubyn Hld**	9	C	Irving Trust	*	d	US	860207
4	**Haslemere Estates**	136	C	**Rodamco**	311	C	NETH	860213
5	**Campari Internat.**	2	C	Mr. Aske Nordin	*	*	SWE	860217
6	**Kenning Motor Grp**	43	C	Mr. Brierley	*	*	NZ	860314
7	**Clive Discount**	10	C	Prudential-Bache Sec.	*	*	US	860318
8	**Biddle Hld**	6	C	Kone	*	d	FIN	860428
9	**Associated Heat Services**	32	C	Comp. Gen. de Chauffe	*	*	FRA	860501
10	**Park Place Invest.**	25	C	Wolters Samson Grp	*	*	NETH	860507
11	**Hampton Gold Mining Areas**	40	C	Metals Expl. Pacific	*	d	AUS	860512
12	**NSS Newsagents**	34	C	**American Brands**	2,143	C	US	860603
13	CPS Computer	*	d	Inspectorate Internat.	*	*	SWZ	860610
14	**Industr. Scotland Energy**	21	I	Texas Gas Exploration	*	d	US	860626
15	**Rotaflex**	18	C	**GTE**	5,884	C	US	860701
16	**New Cavendish Estates**	5	C	Unity	*	d	AUS	860724
17	Ocean Transport & Trading	*	*	Industr. Equity Pacific	*	d	NZ	860827
18	**Elbar Industrial**	3	C	Soc. Gen. de Belgique	*	*	BEL	860902
19	**English Trust Grp**	19	C	PK Banken	*	*	SWE	860926
20	**Wedgwood**	126	C	**Waterford Glass**	187	M	EIRE	861008
21	**Gestetner**	57	C	AFP Investment	*	d	AUS	861016
22	**Berkeley Explor. & Prod.**	16	C	**Canadian Ranger Oil**	130	C	CAN	861020
23	**Imperial Cont. Gas Assoc.**	476	C	Gulf Resources	*	*	US	861021
24	**Property Hld & Inv.Trst**	97	C	Chase	*	d	AUS	861023
25	**Henara**	6	I	**Warner-Lambert**	2,602	C	US	861031
26	Dataserv	*	*	**Bellsouth**	10,858	I	US	861125
27	**Gates, Frank G**	6	C	Colin Giltrap	*	*	NZ	861126
28	Goode Durrant & Murray	*	d	Ariadne Australia	*	d	AUS	861127
29	Goldsmiths Grp	*	d	Oriflame	*	d	LUX	861216
30	For Eyes	*	*	Cooper Vision	*	*	US	870109
31	**Nationwide Leisure**	8	C	Inspectorate Internat.	*	*	SWZ	870202
32	Jacksons Bourne End	*	*	Bugge Eiendom	*	d	NOR	870212
33	**Debron Invest.**	12	C	Interface Flooring	*	*	US	870302
34	**United Leasing**	79	C	Inspectorate Internat.	*	*	SWZ	870401
35	Howard & Wyndham	*	d	Intermediate Securities	*	*	CAYM	870404
36	**Assoc. Book Publishers**	50	C	International Thomson	*	d	CAN	870617
37	**Acsis Jewellery**	1	C	Windstorm	*	*	BR.VIR	870626
38	Baynes, Charles	*	d	Lotus Investments	*	*	BR.VIR	870629

APPENDIX A (Continued)

39	**Wordplex**	7	I	**Norsk Data**	373	M	NOR	870702
40	Guinness Peat Grp	*	I*	Equiticorp	*	M*	NZ	870828
41	**Cheswire Wholefoods**	14	I	Wessanen Nederland	*	d	NETH	870903
42	**Equity & Law**	324	C	Brierley Investments	*	d*	NZ	870904
43	**Equity & Law**	324	C	Compagnie du Midi	*	*	FRA	870911
44	**Hampton Trust**	36	C	Aurora	*	*	NZ	870911
45	Country & New Town Prop.	*	C*	Pennant Hld	*	d	AUS	870917
46	**Wills Grp**	13	C	Australian Investors	*	d*	AUS	870917
47	**IBL**	67	CI	Inspectorate Internat.	*	*	SWZ	871009
48	**Anchor Chemicals**	12	IC	**Air Prod. & Chemicals**	1,615	C	US	871204
49	MK Electric	*	C*	**Legrand**	612	C	FRA	871207
50	**Tricentrol**	73	C	**Elf Aquitaine**	3,390	C	FRA	871211
51	**Minet Hld**	318	C	St. Paul Companies	*	C*	US	880204
52	**TSL Grp**	10	C	**Saint-Gobain**	2,000	I	FRA	880311
53	Moorgate Merchantile Hld	*	d	**Woodchester Invest.**	261	C	EIRE	880322
54	**Case Grp**	62	I	**Gandalf Technologies**	0	C	CAN	880524
55	**Rowntree**	1,177	C	Jacobs Suchard	*	d	SWZ	880526
56	Freshbake Foods	*	d	**Campbell Soup**	2,677	C	US	880531
57	**Rowntree**	1,177	C	**Nestle**	3,638	C*	SWZ	880630
58	Gnome Photo. Prod.	*	C*	Fairweather Invest.	*	*	CAYM	880707
59	**Ranks Hovis McDougall**	1,194	C	Goodman Fielder Wattie	*	d	AUS	880720
60	Lodge Care	*	C*	Forvaltnings Gamlestaden	*	d*	SWE	880725
61	**Peachey Property Corp.**	160	C	**Wereldhave**	370	C	NETH	880906
62	**Consol. Gold Fields**	2,033	C	Minorco	*	C	SAF	880921
63	**Hammerson Prop.Inv&Dev**	696	C	**Rodamco**	1,314	C	NETH	880923
64	**Scottish & Newcastle**	967	C	Elders IXL (**Fosters**)	998	I	AUS	881017
65	**Avdel**	N.A.	C	Banner Indust.	*	I	US	881027
66	**Aurora**	75	C	**Australian Nat. Indust.**	251	I	AUS	881103
67	**MY Hld**	24	C	General Mining Union	*	I	SAF	881104
68	**Cundell Grp**	24	I	**Jefferson Smurfit**	652	C*	EIRE	881201
69	**CLF Hld**	38	I	Yeoman Internat.	*	C*	EIRE	881202
70	**Task Force**	13	I	**Adia**	291	C	SWZ	881214
71	**Redfaern**	51	C	**Industrivarden**	483	C	SWE	881215
72	**Avdel**	N.A.	C	**Textron**	1,127	C	US	881220
73	**Collins (William)**	178	C	**Groupe de la Cite**	203	C	FRA	881229
74	**Bassett Foods**	35	C	Procordia	*	d	SWE	890112
75	**Chapman Indust.**	14	C	Munksjo	*	*	SWE	890201
76	**Johnstone's Paints**	11	C	**Elf Aquitaine**	5,062	C	FRA	890215
77	**GT Management**	79	IC	Bank in Liechtenstein	*	d	LIECH	890308
78	**Boase Massimi Pollitt**	61	C	Boulet Dru Dupuy Petit	*	*	FRA	890329
79	**Chambers & Fargus**	5	C	KF Industri	*	*	SWE	890503
80	**Boase Massimi Pollitt**	80	C	**Omnicom**	293	C	US	890519
81	**Keep Trust**	36	C	**Fitzwilton**	69	C	EIRE	890530
82	Sommerville (William)	*	d	**James River**	1,335	C	US	890616
83	**M6 Cash & Carry**	N.A.	I	**Fitzwilton**	68	C	EIRE	890621
84	**Guinness Mahon**	80	IC	**Bank of Yokohama**	5,121	I	JAP	890623
85	**Business Mortgages Trst**	8	C	Nykredit	*	*	DEN	890629

APPENDIX A (Continued)

86	**Molins**	65	C	Indust. Equity Pacific	*	d	NZ	890713
87	**Gateway Corp.**	1,413	C	Newgateway	*	*	US	890719
88	**Descoutter Brothers**	36	C	**Atlas Copco**	597	C	SWE	890809
89	**Randsworth Trust**	122	C	**JMB Realty**	9	C	US	890904
90	**Silkolene Lubricants**	14	C	Fuchs Petrolub O&C	*	d	WG	890920
91	**DRG**	470	C	Pembridge Associates	*	*	US	890926
92	**Gordon Russell**	42	I	Steelcase Strafor	*	*	FRA	891006
93	**Pearl Grp**	771	C	Austr. Mutual Prov. Soc.	*	*	AUS	891028
94	**Coates Brothers**	205	C	Orkem	*	*	FRA	891031
95	**Toothill (RW)**	3	C	Adamas Industries	*	*	SWE	891101
96	Kinta Kellas Invest.	*	d	United Engineers	*	d	MALAY	891108
97	**Rothmans Internat.**	1,486	C	**Richemont (financiere)**	1,004	I	SWZ	891109
98	**Hestair**	162	C	**Adia**	292	C	SWZ	891120
99	**UK Paper**	178	I	Metsa-Serla	*	d	FIN	891121
100	Sheerness Steel	*	*	**Co-Steel**	153	C	CAN	891206
101	**Jaguar**	*	d	**Ford Motor**	13,806	C	US	891208
102	**Pergamon AGB**	63	C	Maxwell Foundation	*	*	LIECH	891208
103	**Builder Grp**	33	I	CEP Communication	*	d	FRA	891211
104	**Carron Phoenix**	14	I	Etablissement Bene	*	*	FRA	891218
105	**UK Paper**	178	I	**Fletcher Challenge**	1,562	I	NZ	891218
106	**National Telecom.**	45	I	**CGE (Alcatel)**	2,812	I	FRA	891222
107	**TDS Circuits**	*	d	**Olivetti**	1,789	I	ITAL	891222
108	General Portfolio	*	*	Groupe des Assur. Nat.	*	*	FRA	891228
109	**Morgan Grenfell**	461	C	**Deutsche Bank**	6,682	C	WG	891229
110	**Carron Phoenix**	10	I	Franke Holdings	*	*	SWZ	900102
111	**Hartwell**	84	C	Jameel Group	*	*	SAUDI	900104
112	**Britannia Security Grp**	145	C	ADT	*	d	FRA	900109
113	**Monotype Corp.**	45	C	King, Blank & Assoc.	*	*	US	900112
114	**KLP Grp**	24	C	RSCG	*	*	FRA	900115
115	**Hyman**	16	C	Carpenter (ER)	*	*	US	900129
116	**ABB Kent Hld**	89	C	(Asea) **Brown Boveri**	1,342	C	SWZ	900201
117	**GPG**	123	C	Industr. Equity Pacific	*	d	NZ	900201
118	**Mainmet Hld**	*	d	**Industr. Serv. System**	58	C	DEN	900202
119	**Runciman (Walter)**	37	C	Forvaltnings Avena	*	*	SWE	900223
120	**Lancaster**	23	I	Jardine Matheson Hold.	*	d	HK	900228
121	**Camford Engineering**	60	C	**Adelaide Steamship**	636	I	AUS	900301
122	**AMI Healthcare Grp**	249	I	Generale des Aux	*	d	FRA	900308
123	**City Gates Estates**	28	I	Fastighets Accura	*	*	SWE	900319
124	**Molins**	59	C	Leucadia National	*	d	US	900328
125	**London & Edinburgh Trst**	247	C	Foersaekrings. SPP	*	*	SWE	900402
126	**Midsummer Leisure**	102	C	**European Leisure**	49	C	EIRE	900402
127	**Aquascutum**	29	C	**Renown**	1,211	I	JAP	900423
128	**Monks & Crane**	15	C	Wurth Holding	*	*	WG	900427
129	**Continental Microwave**	8	C	**Nobel Industries**	625	C	SWE	900502
130	**Crystalate**	26	C	Vishay Intertech.	*	d	US	900525
131	**Internat. Colour Mngt**	*	d	**Eichhof Grp (Brauerei)**	15	I	SWZ	900606
132	**Triefus**	10	C	**Asahi Industrial**	836	I	JAP	900608

APPENDIX A (Continued)

133	**Tozer Kemsley & Milbourn**	287	C	**Brierley Investments**	1,199	I	NZ	900615
134	David & Charles	*	*	Reader's Digest Assoc.	*	d	US	900625
135	**Isle of Man Steam**	21	C	**Sea Containers**	2,105	C	US	900625
136	Technology Proj.Serv	*	d	Societe Generale	*	*	SWZ	900704
137	**Epicure Indust.**	26	C	Heron	*	*	SWE	900711
138	**Hoskyns Grp**	208	C	**Cap Gemini Sogeti**	1,201	I	FRA	900718
139	**Aaronson Bros**	25	C	Glunz	*	d	WG	900806
140	**Dukeminster**	64	I	Etablissement Finital	*	*	LIECH	900817
141	**AMS Indust.**	6	C	**Siemens**	13,194	C	WG	900911
142	Lowe-Howard-Spink&Bell	*	*	**Interpublic Group**	658	C	US	900920
143	**Mount Charlotte Inv.**	651	C	**Brierley Investments**	1,007	I	NZ	900924
144	**Klark-Teknik**	10	C	Mark IV Industries	*	d	US	901031
145	**Priest Grp (Benjamin)**	38	C	Marine Hld	*	*	US	901101
146	**Davis & Metcalfe**	13	C	**Thyssen**	3,494	C	WG	901108
147	**STC**	1,357	C	**BCE**	6,630	C	CAN	901108
148	**Touchstone Grp**	N.A.	C	**Getronics**	189	C	NETH	910118
149	**Broad Street Grp**	7	C	Boulet Dru Dupuy Petit	*	*	FRA	910122
150	Wentworth Internat. Grp	*	d	**Compagnie de Suez**	5,711	I	FRA	910130
151	**Daks Simpson Grp**	20	C	**Sankyo Seico**	364	I	JAP	910225
152	**Century Oils Grp**	40	C	**Fuchs Petrolub O&C**	74	I	WG	910226
153	**Merlin Internat. Prop.**	3	C	Estonia Venture	*	*	PANAM	910228
154	**ASD**	29	C	Usinor-Sacilor	*	*	FRA	910315
155	**Memec**	52	C	**Veba**	6,496	C	WG	910315
156	**Empire Stores Grp**	39	C	**Au Printemps**	530	C	FRA	910318
157	**Herrburger Brooks**	2	C	**Kimball Internat.**	152	C	US	910403
158	**Butler Cox**	6	I	Computer Sciences	*	d	US	910513
159	**Brompton Hld**	14	C	**Adia SA**	560	C	SWZ	910603
160	**SD Scicon**	75	C	**General Motors Corp**	10,897	C	US	910611
161	**Flexello Castors&Wheels**	4	C	Nansin	*	*	JAP	910619
162	**Tace**	15	C	Stac Partners lp	*	*	US	910702
163	**Tace**	15	C	Thermo Electron	*	d	US	910702
164	**Leica**	110	C	Unotec Holding	*	*	SWZ	910711
165	**Guinness Mahon Hold.**	50	I	**Bank of Yokohama**	3,847	C	JAP	910717
166	Invergordon Distill.	*	d	**American Brands**	4,198	C	US	910806
167	**Synapse Computer Serv.**	4	C	EC Soft	*	*	NETH	910813
168	**Sovereign Oil & Gas**	101	C	Neste	*	d	FIN	910912
169	**Interlink Express**	14	C	**Mayne Nickless**	521	C	AUS	910920
170	Unitrust Europe	*	*	Franz Haniel & Cie	*	*	WG	911009
171	**Harding Grp**	4	C	RCK	*	*	US	911011
172	**Geers Gross**	4	C	**Publicis**	193	C	FRA	911104
173	**Telfos Hld**	28	C	Auricom Beteiligungs	*	*	AUS	911105
174	Edbro	*	*	Marrell	*	*	FRA	911125

APPENDIX A (Continued)

Sample size:	CAPM	118	**Sample size:**	CAPM	48
	MM	118		MM	50
	IM	143		IM	71
Market value:	Mean[A]	154	**Market value:**	Mean	2,375
	St.Dev	331		St.Dev	3,544

Notes to the table:

A The market capitalisation of the domestic (target) companies was obtained from the quarterly issue of the London Business School Risk Measurement Service (LBS RMS) dating 6 to 9 months prior to the month of the bid announcement. For a few companies, the market capitalisation was not available from the LBS RMS. In these circumstances, the market capitalisation has been obtained from Datastream. In four instances, however, it proved impossible to obtain data on the market capitalisation 6-9 months prior to the bid announcement from either source. The mean and standard deviation of the target company market capitalisation is therefore calculated on the basis of 397 observations (rather than 143 for which the IM analysis is carried out). (Information on market capitalisation is only given for companies included in the analysis).

B The market capitalisation of the overseas (bidding) companies is as of 8 months prior to the date of the bid announcement. Datastream gives market values in local currency. These figures have been converted into pound sterling at the exchange rate 8 months prior to the bid announcement.

C AUS = Australia, BEL = Belgium, BERMU = Bermuda, BR.VIR = British Virgin Island, CAN = Canada, CAYM = Cayman Island, DEN = Denmark, EIRE = Republic of Ireland, FIN = Finland, FRA = France, HK = Hong Kong, ITAL = Italy, JAP = Japan, LIECH = Liechtenstein, LUX = Luxembourg, MALAY = Malaysia, NETH = The Netherlands, NZ = New Zealand, NOR = Norway, PANAM = Panama, SAUDI = Saudi Arabia, SAF = South Africa, SWE = Sweden, SWZ = Switzerland, US = United States, and WG = (West) Germany.

D "Sapmle" refers to which tests were carried out on the company in question. This varied with data availability. "C" refers to the Capital Asset Pricing Model (CAPM). The "C" companies were also included in the Market Model (MM) and Index Model (IM) analysis. "M" refers to MM. These companies were also included in the IM analysis, but not in CAPM. Lastly, "I" companies were only included in the IM analysis. For companies marked "d", insufficient data was available for any kind of analysis, and companies marked "*" were not included in the Datastream database.

SAMPLE OF DOMESTIC ACQUISITIONS IN THE UNITED KINGDOM (1986-1991)

	TARGET COMPANY	MARKET CAP TARGET £M[A]	SAMPLE[B]	BIDDING COMPANY	MARKET CAP BIDDER £M	SAMPLE	ANNOUNCE-MENT DATE
1	Macarthys Pharmaceuticals	24	C	Jadell	*	*	860102
2	Wagon Finance Corp	18	C	MAI	142	C	860113
3	Williams, John, of Cardiff	2	C	Wyndham	2	C	860113
4	Gomme Holdings	5	C	Millmine	*	C	860114
5	Davenports Brewery	20	C	Wolverhampton & Dudley Brew	105	C	860116
6	Distillers	1,075	C	Guinness	509	C	860120
7	Newman-Tonks	*	d	McKechnie Brothers	77	C	860123
8	Automotive Products	42	C	BBA Group	57	C	860127
9	Coats Patons	443	C	Dawson International	246	C	860127
10	Inn Leisure	17	I	Devenish (JA)	22	C	860128
11	Extel	112	C	Demerger Corp	*	C	860131
12	Yarrow	19	C	Weir Group	14	C	860131
13	Wadkin	*	*	Robinson (Thomas)	*	d	860203
14	Breakmate	4	I	Sketchley	74	d	860204
15	Coats Patons	443	C	Vantona Viyella	*	d	860210
16	Aaronite Group	6	I	Morceau Holdings	24	I	860212
17	Davenports Brewery	20	C	Greenall Whitley	*	*	860212
18	Gaunt (Rowland)	2	C	Spong Holdings	*	*	860212
19	McKechnie Brothers	77	C	Williams Holdings	45	C	860213
20	Uko International	18	C	Suter	46	C	860214
21	West's Group Intern.	6	C	Tilbury Group	19	C	860214
22	Imperial Group	1,384	C	United Biscuits	672	C	860217
23	Granada Group	427	C	Rank Organisation	639	C	860218
24	A C Cars	*	*	Mr William West	*	C	860219
25	Country Gentlemen's Ass.	4	C	Bestwood	3	C	860224
26	Park Hall Leisure	*	*	Granada Group	427	C	860225
27	McCorquodale	78	C	Norton Opax	33	C	860304
28	Staffordshire Potteries	4	C	Coloroll	29	I	860304
29	Raybeck	11	C	Legibus 687	*	*	860305
30	Dixon David Group	3	C	Gelfer (A&J)	*	d	860309
31	Home Charm	135	C	Ladbroke	501	d	860309
32	Martonair Internat.	40	C	IMI	256	C	860310
33	Shaw Carpets	7	C	Lamont Holdings	33	C	860310
34	Bush Radio	6	I	Prestwich Holdings	14	C	860311
35	Cope Allman	68	C	Hawley Group	*	d	860311
36	MCD Group	18	C	Crowther (J)	*	d	860311
37	WW Group	4	C	John Vrowter	*	*	860311
38	Promotions House	7	I	WPP	7	C	860314

APPENDIX B (Continued)

39	Addison Page	34	I	Chetwynd Streets	*	*	860324
40	A & G Security Electr.	6	C	Halma	*	*	860325
41	Country Gentleman's Ass.	4	C	Fredericks Place Group	*	*	860328
42	Woolworth Holdings	*	*	Dixons	803	C	860403
43	Berishford S&W (sugar)	354	C	Hillsdown Holdings	296	C	860404
44	Marshalls Universal	11	C	British Syphon Inds.	22	C	860408
45	Our Price	40	I	Smith (WH)	354	C	860408
46	RFD Group	12	C	Wardle Storeys	33	C	860409
47	Pegler-Hattersley	84	C	Tomkins, FH	94	C	860410
48	Standard Fireworks	5	C	M Y Dart	*	*	860412
49	Berisford (ribbon manuf)	4	C	Allied Textile Companies	44	C	860414
50	McKechnie Brothers	80	C	Evered Holdings	*	C	860414
51	Standard Chartered	644	C	Lloyds Bank	1,458	C	860415
52	Protimeter	3	I	Bowthorpe	145	C	860416
53	SGB	65	I	Mowlem (John)	65	C	860417
54	Howard Group	21	I	PWS International	19	C	860421
55	Rotaflex	20	I	Emess Lighting	39	C	860422
56	Canvermoor	3	C	Cadbury Schweppes	699	C	860423
57	APV Holdings	77	C	Siebe	222	C	860424
58	Burnett & Hallamshire	*	d	Anglo United Dev. Corp	*	d	860424
59	Moss, Robert	22	C	Bunzl	353	C	860424
60	Stock Conversion	296	C	P & O	1,019	C	860424
61	Chart Foulks Lynch	*	d	Cowan de Groot	*	C	860425
62	Mann & Co	*	*	Hambros	48	C	860428
63	Wedgwood	75	C	London International	173	C	860429
64	Berishford S&W (Sugar)	354	C	Tate & Lyle	324	C	860430
65	British Vending Inds.	6	C	GKN	563	C	860430
66	Petranol	*	*	Inoco	*	d	860430
67	Brickhouse (Dudley) Int.	11	C	Glynwed International	173	C	860501
68	Benford Concrete Machinery	14	C	B M Group	22	C	860502
69	Coin Industries	6	I	Burgess Products	10	C	860502
70	Roberts, Adlard	8	I	Bowater Industries	297	C	860502
71	Land Investors	51	C	Berger Consol. Property	*	C	860506
72	Brown, John	35	C	Trafalgar House	1,188	C	860507
73	Aitken Hume	50	C	Tranwood Group	*	d	860508
74	First Security	*	*	British Car Auction	64	C	860508
75	Duport	22	C	Williams Holdings	56	C	860512
76	Manchester Ship Canal	16	C	Highams	*	d	860512
77	Whitworth's Food	9	I	Booker McConnell	348	C	860512
78	Bevan D F	2	I	Wheway	5	C	860513
79	Hoggett Bowers	2	I	Blue Arrow	*	*	860513
80	Pritchard Services Group	80	I	Wawley group	*	*	860513
81	Boosey & Hawkes	6	C	Music Sales	*	*	860518
82	Yarrow	19	C	CAP	*	*	860519
83	RFD Group	12	C	Scapa Group	160	C	860520
84	Standard Fireworks	5	C	Scottish Heritable Trust	21	C	860521
85	H Samuel	11	C	Ratners	34	C	860523

APPENDIX B (Continued)

86	**Don Brothers Buist**	14	I	**Shell Trnspt & Trdg**	7,579	C	860524
87	**Gable House**	8	I	**Ladbroke**	587	C	860527
88	Samuel Properties	*	*	**Clayform Properties**	21	I	860603
89	**Longton Industrial Hold.**	8	C	**Thomson T-line**	1	C	860604
90	**Bootham Engineers**	2	C	**Dowding & Mills**	24	C	860606
91	**Clarke (Clement) Hold.**	9	I	**Boots**	1,466	C	860609
92	Ford (Martin)	*	*	Iridium Investments	*	C	860609
93	**Benford Concrete Mach.**	14	C	**Blackwood Hodge**	27	C	860610
94	**Shorrock**	18	I	**BET**	783	C	860612
95	**Biddle Holdings**	6	C	**Myson Group**	31	C	860617
96	**Warehouse Group**	3	C	**Freemans**	218	C	860619
97	Commercial Bank of Wales	*	*	**Bank of Scotland**	467	C	860620
98	**JSD Computer Grp**	4	C	**Hestair**	28	C	860620
99	**Eleco Holdings**	16	C	**Whitecroft**	33	C	860623
100	**Milletts Leisure Shops**	9	C	**Sears**	1,639	C	860623
101	**Gelfer, A&J**	5	C	**Crowther (J)**	6	C	860625
102	**Rotaflex**	20	C	**MK Electric**	103	C	860625
103	**Bruntons**	4	C	**Carclo Engineering Grp**	15	C	860708
104	Paul Michael Leisurewear	*	*	Cleves Investments	*	C	860708
105	**Midland Marts**	3	C	Oyston Estate Agency	*	*	860710
106	**Property Hldngs & Inv.Trust**	94	C	**Greycoat Group**	126	C	860711
107	**Authority Investments**	1	C	Management Group	*	C	860715
108	**Bestobell**	37	C	**Meggitt Holdings**	35	C	860715
109	**Mayhew Foods**	15	I	**Northern Foods**	608	C	860715
110	**Slaters Food Products**	8	C	Freshbake Foods	*	d	860715
111	Astra Holdings	*	d	Sumner (Francis) Hld	*	*	860716
112	**Barrie Inv. & Finance**	6	I	**Bestwood**	16	C	860716
113	**Brengreen**	23	C	**BET**	993	C	860722
114	**HAT Group**	78	C	**BET**	993	C	860722
115	**Oldacre**	11	I	**Unigate**	525	C	860722
116	**Spafax Televison Hld**	4	I	**Aspen Communications**	11	I	860723
117	**Ruddle, G**	7	C	**Grand Metropolitan**	3,076	C	860725
118	Hardgreaves Grp	*	*	**Coalite Grp**	226	C	860728
119	**Plan Invest**	1	I	**Stakis**	137	C	860729
120	Blacks Leisure	*	d	**Sears**	1,615	C	860812
121	Peek Holdings	*	d	Javelin	*	C	860814
122	**Aidcom Internat.**	12	C	Addison Page	*	d	860818
123	**PSM Internat.**	13	I	**McKechnie Brothers**	112	C	860818
124	**Greenbank Grp**	9	C	Walker (C&W)	*	C	860822
125	**London & Midland Inds**	49	C	**Williams Hld**	76	C	860827
126	**May & Hassell**	9	C	**Hillsdown Hld**	338	I	860827
127	**Meadow Farm Produce**	30	I	**Hillsdown Hld**	338	I	860829
128	**Brownlee**	9	C	**Meyer Internat.**	179	C	860903
129	**Marlborough Property**	17	C	Rivlin (ID&S) Hld	*	d	860910
130	**Blue Bird Confect. Hld.**	3	C	**Hillsdown Hld**	338	I	860912
131	**Good Relations**	10	C	Lowe Howard-Spink&Bell	*	*	860912
132	**Webber Electro Components**	4	C	**IMI**	320	C	860912

APPENDIX B (Continued)

133	**Dew, George**	8	C	Allied Plant Grp	*	*	860916
134	**Garnar Booth**	16	C	**Strong & Fisher**	19	C	860918
135	**Prince of Wales**	10	C	Goldsmith Grp	*	d	860919
136	**Grosvenor Grp**	6	C	**BBA Grp**	128	C	860923
137	Crusts	*	d	**Kennedy Brookes**	39	C	861003
138	Gilbert House Invest.	*	*	Mr Wray	*	C	861006
139	**Monk, A**	13	C	**Davy Corporation**	90	C	861008
140	**Counter Prod. Marketing**	13	I	**Davidson Pearce Grp**	22	I	861020
141	**Heath, CE**	203	C	**PWS Hld**	18	I	861020
142	**LCP Hld**	101	C	**Ward White**	267	C	861021
143	**Sandhurst Marketing**	17	C	Tootal	*	d	861022
144	**Woodhead (Jonas) & Son**	8	C	**Carclo Engineering Grp**	18	C	861024
145	**Grosvenor Grp**	10	C	Hollis	*	*	861029
146	Dialene	*	d	**Bunzl**	621	C	861102
147	**McCorquodale**	117	C	Datafin	*	*	861102
148	**AE**	177	C	Hollis	*	*	861103
149	Lincroft Kilgo	*	d	Priest Marians	*	d	861107
150	**Simon Engineering**	148	C	Valuedale	*	*	861107
151	**Viewplan**	10	I	**Trilion**	7	I	861109
152	Burns-Anderson	*	d	Dudley	*	*	861111
153	**AE**	177	C	Turner & Newall	*	*	861113
154	**Bryant Holdings**	94	C	English China Clays	*	*	861114
155	**London & Cont. Advt.Hld**	36	C	**MAI**	247	C	861114
156	**Snowdon & Briggs**	8	I	**Fitch Lovell**	198	C	861114
157	**Steel Brothers Hld**	82	C	**British&Commonwealth Ship.**	804	C	861114
158	**Exco**	520	C	**British&Commonwealth Ship.**	804	C	861120
159	**Grosvenor Square Prop.**	16	I	**Ass. British Ports**	212	C	861120
160	**Pilkington Brothers**	948	C	**BTR**	5,250	C	861120
161	**Fothergill & Harvey**	21	C	**Courtaulds**	1,115	C	861121
162	**Norscot Hotels**	5	I	**Pleasurama**	249	C	861124
163	**Scottish Agricult. Inds.**	20	C	**ICI**	6,170	C	861124
164	**Crouch (Derek)**	1	C	**Ryan Internat.**	21	C	861203
165	**European Ferries**	375	C	**P & O**	1,326	C	861204
166	**London & Northern Grp**	75	C	Demerger Two	*	*	861205
167	**Lynton Hld**	36	C	Property & Revers. Inv.	*	d	861205
168	**Rembia Rubber**	2	C	**Rowe Evans Invest.**	12	C	861205
169	**Wold**	13	I	Freshbake Foods	*	d	861205
170	**Bulmer & Lumb**	7	C	**Allied Textile Comp**	61	C	861208
171	**Restmor**	11	C	**BSG Internat**	57	C	861208
172	**Supra**	11	C	**Evode Grp**	12	C	861208
173	United Trust & Credit	*	d	Somportex Hld	*	*	861208
174	**Equipu**	14	C	**Sketchley**	105	C	861210
175	**Barrow Hepburn**	18	C	**Yule Catto**	30	C	861212
176	Bredero Properties	*	d	**Slough Estates**	430	C	861218
177	**Fogarty**	22	C	**Coloroll**	53	I	861218
178	**Whitworth**	3	I	**STC**	764	C	861224
179	**Spectra Auto. & Eng. Prod.**	3	I	**Burmah Oil**	708	C	870105

180	Feb Internat.	2	C	Tarmac	1,451	C	870114
181	Baker Perkins	123	C	APV Holdings	198	C	870116
182	Tenby Industries	*	d	Emess Lighting	48	C	870120
183	Beisfords Grp (ribbon)	6	C	Ferguson Indust. Hld	70	C	870122
184	Indust. Precision Casting	*	*	Cookson Group	698	C	870123
185	Wettern Brothers	1	C	RMC	569	C	870125
186	DJ Security Alarms	4	C	Britannia Security Grp	22	I	870126
187	Taddale Investments	*	*	Thomson T-line	9	I	870202
188	Nottingham Brick	21	C	Marley	315	C	870205
189	Avana Grp	184	C	Ranks McDougall	637	C	870206
190	Barrow Hepburn	16	C	BTP	58	C	870210
191	Municipal Properties	9	C	Merivale Moore	21	I	870212
192	Sarosota Technology	12	I	Peek Hld	*	d	870212
193	Arncliffe Hld	3	C	Govett Strategic Inv.Trust	221	C	870213
194	Newbould & Burton	3	C	Black (Peter)	81	C	870213
195	Home Farm Products	4	C	Sutherland (ET) & Son	10	I	870216
196	Chamberlain Phipps	31	C	Wardly Storeys	49	I	870217
197	Thermax Hld	12	C	Heywood Williams Grp	62	I	870219
198	Trade Promotion Services	9	I	EMAP	120	C	870226
199	London&Prov. Shop Centres	42	C	Randsworth Trust	N.A.	C	870227
200	Mitchell Somers	19	C	Eagle Trust	N.A.	C	870303
201	Peerless	*	d	Newman-Tonks	67	C	870309
202	Charlie Brown Car Parts	*	*	Woolworth Hld	*	*	870310
203	Hillards	106	C	Tesco	1,494	C	870310
204	Garner Booth	15	C	Pittard Grp	13	C	870317
205	Ford & Weston	*	d	Raine Inds.	20	C	870318
206	Centrovincial Estates	31	C	Gilbert House Inv.	*	*	870319
207	London & Northern Grp	72	C	Evered Hld	*	*	870319
208	Standard Securities	19	C	Local London Grp	*	d	870319
209	Scott Greenham	25	I	BET	1,067	C	870323
210	Wickes	50	I	Cityquest	*	*	870323
211	Norcros	339	C	Williams Hld	208	C	870324
212	Apex Properties	8	C	Randsworth Trust	N.A.	C	870330
213	British Car Auctions	107	C	Hawley Grp	*	d	870330
214	Superdrug	168	C	Woolworth Hld	*	*	870330
215	Horizon Travel	60	C	Bass	2,255	C	870403
216	Internat. Leisure Grp	56	C	Hudson Place Invest.	*	*	870406
217	Dale Electric Internat.	8	C	Sunleigh Electronics	8	C	870407
218	Comcap	69	I	Atlantic Computers	121	C	870409
219	Crown House	55	C	Coloroll	93	I	870409
220	Dom Holdings	6	C	Hunter	*	d	870409
221	Miles 33	8	C	UEI	177	C	870410
222	Belgrave Holdings	17	C	Precis	*	*	870414
223	WSL Hld	29	C	Granada Grp	702	C	870415
224	Gould (Laurence)	2	C	Robertson Research	*	*	870421
225	Johnsen&Jorgensen Pack.	7	C	Waddington (John)	84	C	870424
226	Garner Booth	18	C	Hillsdown Hld	610	I	870429

APPENDIX B (Continued)

227	**Norank Systems**	7	I	Spong	*	*	870429
228	Dolamore Hld	*	*	Oodles	*	*	870430
229	**Extel**	175	C	**United Newspapers**	505	C	870430
230	**Checkpoint Europe**	5	I	**Britannia Security**	21	I	870501
231	**Combined English Stores**	146	C	**Ratners**	181	C	870501
232	**Combined English Stores**	146	C	**Next**	605	C	870506
233	**Media Tech Internat.**	15	I	**Lee Internat.**	79	I	870506
234	**Stockley**	200	C	**Mountleigh**	124	C	870506
235	**DBE Technology**	4	C	**Ferranti**	406	C	870507
236	**Sunlight Services Grp**	45	C	Davis (Goodfrey) Hld	*	*	870508
237	**Micro Scope**	11	I	**GEC**	4,427	C	870511
238	Pantherella	*	d	**Great Universal Stores**	77	C	870512
239	**Garfunkels Restaurant**	40	C	Bellhaven	*	*	870515
240	**Hallite**	5	C	Evered Holdings	*	*	870518
241	**Riley Leisure**	6	C	**Midsummer Leisure**	18	C	870518
242	**Mitchell Cotts**	50	C	**Suter**	143	C	870519
243	Petranol	*	*	Perrodo	*	*	870531
244	Sim Catering Butchers	*	*	Mr Randall & Associates	*	*	870602
245	Reabrook Hld	*	*	**Yule Catto**	40	C	870603
246	Javis (J)	*	*	Brookeville Securities	*	*	870604
247	Rotunda	*	d	**Scapa Group**	188	C	870604
248	**Stone Internat.**	57	I	**FKI Electricals**	94	C	870605
249	**Wordplex Info Systems**	4	I	Apricot	*	*	870608
250	**Gee Rosen Organisation**	3	I	Blacks Leisure	*	d	870616
251	**Molins**	52	C	**Tozer Kemsley Millbourn**	168	C	870616
252	Ladies Pride	*	*	Leslie Wise	*	d	870617
253	**Mayfair & City Prop.**	14	I	Rivlin	*	d	870618
254	**Holden Hydroman**	5	I	**BBA Grp**	334	C	870623
255	**American Electronic Comp.**	24	I	**Burgess Grp**	32	C	870626
256	**Nolton**	11	C	**Benlox Hld**	8	C	870626
257	**Stewart Wrightson**	198	C	Willis Faber	*	*	870629
258	**Lloyd (FH)**	16	C	**Triplex**	15	C	870702
259	**Octopus Publishing Grp**	225	C	**Reed Internat.**	1,459	C	870702
260	**Jones, Ernest**	9	C	**Ratners**	232	C	870703
261	**Oakwood Grp**	2	C	Bodie, Austin & Assoc.	*	*	870706
262	**Ryman**	12	I	**Pentos**	53	C	870706
263	Scholes, George H	*	*	**Delta Grp**	285	C	870707
264	**Plastic Constructions**	4	C	**Glynwed Internat.**	282	C	870708
265	**Buckley's Brewery**	24	C	Brodian	*	*	870709
266	**Coline International**	15	I	**Dubilier**	53	C	870709
267	**Marshall (Thomas Loxley)**	6	C	**Hepworth Ceramic**	299	C	870710
268	**Holt Lloyd Internat.**	46	C	**Morgan Crucible**	273	C	870713
269	**Merchantile House**	235	C	**British & Commonwealth**	602	C	870716
270	**Deritend Stamping**	14	C	**Carclo Engineering**	38	C	870717
271	Hogg Robinson	*	d	**TSB**	1,885	I	870717
272	Miss Sam	*	*	Blacks Leisure	*	d	870717
273	**United Packaging**	5	C	**Tyzack Turner**	6	C	870720

APPENDIX B (Continued)

274	**Babcock Internat.**	245	C	**FKI Electricals**	109	C	870721
275	Rohan Grp	*	*	Phoenix Prop. & Finance	*	*	870724
276	**Bipel**	8	I	**C I Group**	8	C	870727
277	**Laidlaw**	7	C	**Goode Durrant**	49	C	870727
278	**Hunslet Hld**	3	C	Felfos Hld	*	*	870730
279	**Kleen-e-ze-Hld**	8	C	Rightnovel	*	*	870731
280	**Lewmar**	26	I	**Priest (Benjamin)**	15	C	870805
281	**Merchantile House**	235	C	Quadrex Hld	*	*	870805
282	Press Tools	*	*	Freemont	*	*	870805
283	**Kent (John)**	9	C	Redeyco	*	*	870806
284	**Technology for Business**	3	C	Combined Lease Finance	*	*	870806
285	**Deritend Stamping**	14	C	**Christy Hunt**	2	C	870813
286	**President Entertain.**	26	I	**Pleasurama**	236	C	870828
287	**Appledore A&P**	9	I	Highland Participants	*	d	870904
288	**Barham**	39	C	**Internat. Business Commun.**	24	I	870904
289	**Woodhouse & Rixson**	7	C	**Johnson & Firth Brown**	36	C	870911
290	James Burrough	*	*	**Whitbread**	1,026	C	870914
291	**Aspinall Holdings**	56	C	Walker (Alfred)	*	*	870917
292	**Hawtal Whiting**	34	I	First Security Grp	*	*	870917
293	Allen W H	*	*	**Virgin Grp**	240	I	870921
294	**Powerline**	12	C	**Chloride**	68	C	870921
295	**Storehouse**	1,154	I	**Benlox Hld**	8	C	870927
296	**Brown (Matthew)**	127	C	**Scottish & Newcastle**	622	C	870930
297	**Berisford (S&W)**	490	C	**Assoc. British Foods**	1,552	C	871001
298	**Hill Samuel**	388	C	**TSB**	2,034	I	871002
299	**Micro Lease**	5	C	Newmir	*	*	871006
300	**Aberdeen Constr. Grp**	38	C	**Raine Industries**	60	C	871007
301	**Technical Component Ind.**	15	I	Baynes (Charles)	*	d	871008
302	**Bramall (CD)**	32	C	**Avis Europe**	319	I	871009
303	**Samuelson Grp**	34	C	**Eagle Trust**	13	C	871012
304	Minty	*	*	Priest Marians	*	d	871014
305	Allebone	*	d	**Charterhall**	43	C	871019
306	**Nesco Invest.**	2	C	Baytree Invest.	*	*	871020
307	**Electronic Rentals Grp**	151	C	**Granada**	900	C	871109
308	McLeod Russel	*	d	Kennedy Smale	*	d	871110
309	Ratcliffe Industries	*	d	United Spring & Steel Grp	*	*	871116
310	**TOD**	18	C	**Beazer**	640	C	871116
311	**Eucalyptus Pulp Mills**	43	C	**Ibstock Johnsen**	218	C	871123
312	**MK Electric**	155	C	**RTZ**	2,551	C	871124
313	**Kingsley & Forrester Grp**	14	C	Casket S.	*	*	871203
314	**Swindon Private Hospital**	2	C	**Health Care Services**	8	C	871204
315	**Birmid Qualcast**	142	C	**Blue Circle**	1,059	C	871207
316	**Abaco Investments**	179	C	**British & Commonwealth Hld**	1,455	C	871208
317	**Freemans**	320	C	**Sears**	1,911	C	871211
318	**Waverley Cameron**	1	C	Sanda	*	*	871214
319	Dee Corporation	*	*	Barker & Dobson	*	*	871217
320	**Britoil**	1,216	C	**British Petroleum**	16,731	C	871218

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321	Chase Property Hld	*	d	**Trafalgar House**	1,372	C	871223
322	**Burgess Grp**	72	C	RHP	*	C*	880106
323	**Victor Products**	9	C	NEI	*	C*	880107
324	**MS Internat.**	20	C	**Dobson Park Industries**	109	C	880112
325	Jacksons Bourne End	*	C*	Select Country Hotels	*	C*	880119
326	**Multitone Electronics**	12	C	**Blick**	40	I	880119
327	**Tip Top Drugstores**	19	I	Woolworth Hld	*	I*	880119
328	Wigfalls	*	Id	**Bennett & Fountain**	51	I	880121
329	**Estates Prop. Inv. Co**	77	C	**Peachey Property. Corp.**	161	IC	880128
330	**Waverley Cameron**	1	C	Flavell Communications	*	C*	880128
331	**Wigfalls**	15	C	**Dixons**	1,385	C	880202
332	**Henderson Grp**	56	C	**Newman Tonks Grp**	137	C	880205
333	Phoenix Prop. & Finance	*	C*	**Mountleigh Grp**	637	C	880205
334	**Share Drug**	29	C	Woolworth Hld	*	C*	880215
335	**Henderson Grp**	56	C	**Hepworth Ceramic Hld**	473	C	880218
336	**City Merchant Develop.**	N.A.	C	Imry Internat.	*	Cd	880223
337	Hampton Trust	*	Cd	**Southend Property**	86	Cd	880223
338	**W.Yorksh. Indep. Hospital**	5	I	Community Hospitals	*	Cd	880308
339	Fletcher Dennys Systems	*	Id	Systems Reliability	*	C*	880310
340	**Kennedy Brookes**	113	C	**Trusthouse Forte**	1,964	C	880314
341	**Framlington Grp**	62	C	Throgmorton Trust	*	Cd	880321
342	**Estates Property Inv. Co**	77	C	Giltvote	*	C*	880324
343	**Morceau Hld**	9	C	**Tarmac**	2,121	C	880324
344	**Sekers Internat.**	17	C	Stoddard Hld	*	Cd	880324
345	**Glass Glover Grp**	43	C	Dryvale	*	C*	880325
346	**County Properties**	25	C	Broadland Properties	*	C*	880405
347	**Preedy (Alfred) & Sons**	15	C	**Next**	1,347	C	880405
348	**Crowther (John) Grp**	252	C	**Coloroll**	309	C	880407
349	Marcol	*	Cd	**Cray Electronics**	176	C	880407
350	**Guthrie Corporation**	200	I	**BBA Grp**	458	C	880414
351	**Stanley (AG)**	113	I	Ward White	*	C*	880414
352	**Prontaprint**	8	I	**Continuous Stationery**	13	C	880415
353	**Dubilier Internat.**	78	C	Peek Holdings	*	Cd	880419
354	**Lorlin Electronics**	17	C	**Cooper (Frederick)**	44	C	880427
355	**Sigmex**	9	I	Apricot	*	C*	880428
356	**SPP**	27	I	Braithwaite Grp	*	C*	880428
357	**Windsmoor**	29	I	**Baird (William)**	206	C	880428
358	**DPCE Hld**	111	C	**Granada Grp**	1,013	C	880503
359	**Graham Motor Grp**	18	I	**TSB**	2,049	C	880503
360	**Crowter (John) Grp**	252	C	**Robinson (Thomas) Grp**	145	C	880504
361	**Stead & Simpson**	14	C	**Clayform Properties**	126	I	880509
362	**De Brett (Andre)**	4	C*	Thermawear	*	I*	880512
363	Wistech	*	C*	**Caird Grp**	16	C	880512
364	**Gee (Cecil)**	11	C	**Moss Bros**	37	C	880516
365	**Lynton Prop. & Revers.**	197	C	**BAA**	1,455	C	880516
366	**Ellis & Goldstein**	29	C	Berkertex	*	I*	880525
367	Acre Oil	*	d	**British Gas**	8,840	I	880603

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368	**Amari**	69	C	**Glynwed Internat.**	608	C	880603
369	**Zetters Leisure**	22	C	**Bass**	3,370	C	880606
370	**Runciman (Walter)**	28	C	**Telfos Hld**	29	C	880608
371	**LDH Group**	17	C	**Porter Chadburn**	24	C	880609
372	**Davidson Pearce**	39	I	**Boase Massimi Pollitt**	105	C	880610
373	**Dwek Grp**	25	C	Hillshott	*	C	880614
374	**Banro Industries**	28	C	**Wagon Industrial Hld**	91	C	880615
375	Theme Hld	*	d	**Leisure Investments**	138	I	880617
376	**CoxMore**	25	C	**Oakwood Grp**	10	I	880701
377	**Harris Queensway**	296	C	Lowndes	*	C	880706
378	**Wolstenholme Rink**	17	C	**Cookson Grp**	911	C	880711
379	**Camotech**	10	I	**Boustead**	12	C	880715
380	**Babygro Hld**	11	I	**Lowe (Robert)**	10	C	880718
381	**Atlantic Computers**	361	C	**British & Commonwealth Hld**	1,465	C	880719
382	**Beatson Clark**	18	C	**TT Group**	20	C	880719
383	**Ealing Electro-Optics**	7	I	600 Group	*	C	880720
384	Hard Rock Internat.	*	d	Pleasurama	*	d	880720
385	**Martin (Ronald) Groome**	18	I	**Waverley Cameron**	4	C	880720
386	**Ellis & Goldstein**	16	C	**Alexon**	66	C	880721
387	**Hoskyns Grp**	71	I	**Plessey**	1,065	C	880722
388	**Rover Grp**	3,166	C	**British Aerospace**	821	C	880725
389	**Case Grp**	35	C	**Dowty**	368	C	880726
390	**Ruberoid**	56	C	**Raine Industries**	104	C	880726
391	**Gaynor Grp**	4	I	Scowcroft Family	*	C	880727
392	**Trent Hld**	7	C	**Whitecroft**	83	C	880727
393	**Moorgate Grp**	8	C	Ketson	*	C	880728
394	Ecobric Hld	*	d	Zurich Grp	*	C	880730
395	**Pleasurama**	308	C	**Mecca Leisure Grp**	194	I	880804
396	Newage Transmission	*	C	**Williams Hld**	547	I	880808
397	**Hunter**	203	C	**Wickes**	81	I	880812
398	Catalyst Communic. Grp	*	d	**Holmes & Merchant Grp**	23	C	880823
399	**Wayne Kerr**	5	C	**Farnell Electronics**	203	C	880823
400	**Smallbone**	15	I	Williams Hld	*	d	880830
401	**AGB Research**	78	I	Pergamon Prof & Fin Servs	*	C	880831
402	**Microsystems Grp**	38	I	**Meggitt Hld**	123	C	880901
403	**Jameson Chocolates**	4	C	**Bassett Foods**	27	C	880907
404	**Ryan Internat.**	46	C	Carless	*	C	880907
405	**Ruberoid**	56	C	**Tarmac**	1,598	C	880908
406	**Travis & Arnold**	109	C	Sandell Perkins	*	C	880912
407	**Travis & Arnold**	109	C	**Meyer Internat.**	340	C	880914
408	**Futura Hld**	2	C	Mr BC Oates	*	C	880915
409	**Quest Grp**	16	C	**Erskine House Grp**	54	C	880910
410	**Thermal Scientific**	56	C	**TI Grp**	434	C	880919
411	**Pittard Garner**	67	C	**Strong & Fisher**	39	C	880928
412	**Telephone Rentals**	195	C	**Cable & Wireless**	3,376	C	880928
413	**Virgin Grp**	205	I	Glowtrack	*	C	881004
414	**Pilgrim House Grp**	N.A.	C	**Williams Hld**	904	C	881010

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415	**Hall (Mathew)**	107	C	**AMEC**	232	C		881013
416	**Carless**	181	C	Kelt Energy	*	Cd		881014
417	**Invergordon Distillers**	47	C	DMWS 99	*	C*		881014
418	**Associated Newspapers**	615	C	**Daily Mail & General Trust**	152	C		881017
419	**Birmid Qualcast**	266	C	**Blue Circle**	1,140	C	C*	881017
420	**Burford**	24	I	Chartsearch	*	C*		881017
421	**Mackay (Hugh)**	18	I	**Allied Textile Co.**	87	C	*	881020
422	**BTS Grp**	4	C	Alan Patricof Assoc.	*	C*		881024
423	**Bejam**	212	C	**Iceland Frozen Foods**	109	C		881027
424	**Cundell Grp**	24	I	**Ferry Pickering Grp**	19	C	I	881028
425	**Webb (Joseph)**	14	I	**Mowat Grp**	11	C	I	881031
426	Land Leisure	*	*	**Leisure Investments**	30	I	C	881104
427	**Zygal Dynamics**	11	C	**Misys**	23	I	I	881107
428	**Suter**	201	C	Thomson T-Line	*	I	d	881109
429	Buckley's Brewery	*	d	**Guinness**	2,418	C	d	881111
430	**Granyte Surface Coatings**	10	I	McLeod Russel Hld	*	C	d	881114
431	**Armstrong Equipment**	74	I	**Wardle Storeys**	139	C	C	881116
432	**Collins (William)**	178	C	**News Internat.**	444	C	C	881117
433	**Dale Grp**	11	I	**Beauford Grp**	9	C	C	881118
434	**London&Overseas Freight.**	2	I	**Norex**	13	C	C	881118
435	**British Syphon Ind.**	43	C	**Britannia**	12	I	*	881121
436	**Cundell Grp**	24	I	Crown Industr. Grp	*	C	*	881123
437	**London Shop**	118	I	**Peel Hld**	120	C		881125
438	**Underwoods**	39	I	**Boots**	1,981	C	C	881128
439	**Hille Ergonom**	5	I	Wassall	*	C	d	881129
440	**Johnson Fry**	10	I	**LIT Hld**	27	C	C	881129
441	**Corah**	19	I	**Charterhall**	50	C	C	881201
442	**Christy Hunt**	26	C	Triplex Lloyd	*	C	d	881202
443	**Argyle Trust**	15	C	Dewey Warren Hld	*	C	*	881212
444	**Thomson T-Line**	150	C	**Ladbroke Grp**	1,679	C	*	881212
445	**Ryan Internat.**	41	C	Digger	*	C	*	881215
446	Wistech	*	*	Offertest	*	C	*	881216
447	HPC	*	d	**Sidlaw Grp**	31	C	d	890118
448	**Polytechnic Electronics**	10	C	Peek	*	C	d	890118
449	**Ricardo Grp**	18	C	**First Technology**	32	C	*	890120
450	**CSL Corp.**	16	C	TIP Europe	*	C	*	890126
451	**Bassett Foods**	35	C	**Cadbury Schweppes**	2,395	C	d	890202
452	**Health Care Services**	9	C	Compass Grp	*	C	d	890206
453	**JSB Electrical**	12	I	**Emess**	116	C	*	890206
454	**Piccadilly Radio**	9	I	Miss World Grp	*	C	*	890206
455	**Marina Development Grp**	50	I	Local London Grp	*	d	H	890207
456	**Personal Computers**	13	I	**P & P**	39	H	C	890208
457	**Chamberlain Phipps**	55	I	**Evode Grp**	73	C	*	890209
458	**Tyzack**	20	C	GSM	*	C	*	890213
459	**Chamberlain Phipps**	55	C	**Bowater Industries**	479	C	d	890221
460	**Local London Grp**	106	I	Priest Marians	*	C	d	890221
461	Jacksons Bourne End	*	*	Vasella	*	*		890222

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462	**Delmar Grp**	4	C	**Bromsgrove Industries**	26	C		890224
463	**Splash Products**	6	I	Astra Trust	*	*		890227
464	London Park Hotels	*	d	**Mount Charlotte Invest.**	449	C		890306
465	**Worthington (AJ) Hld**	2	C	Brook	*	*		890306
466	**Ratcliffs (Great Bridge)**	5	C	Severn	*	*		890307
467	**DDT Grp**	4	C	Vistec	*	d		890310
468	**CCA Publications**	N.A.	C	**HTV**	47	C		890315
469	**Church (Charles) Develop.**	99	I	Church (Charles) Hld	*	*		890322
470	**Plumb Hld**	31	I	**Raine Industries**	112	C	*	890328
471	**Magnet**	428	C	DMWSL 033	*	*		890329
472	**Millward Brown**	10	C	**WPP Group**	233	C	*	890330
473	**DDT Grp**	4	C	Apricot Computers	*	*		890410
474	**Lambert Howarth Grp**	7	C	**Black (Peter) Hld**	76	C	d	890410
475	**Northern Engineering Ind.**	238	I	Rolls Royce	*	d	C	890414
476	**Viking Packaging**	11	I	**Bowater Industries**	496	C	*	890418
477	**Gateway Corp.**	1,555	C	Isosceles	*	*		890419
478	Tysons	*	*	Donelon Tyson	*	d		890420
479	**Budgens**	123	C	**Low (William)**	82	C		890421
480	**Habit Precision Engineering**	8	C	**Epicure Holdings**	14	C		890424
481	**W A Hld**	15	C	**Haden MacLellan Hld**	102	C	*	890425
482	**Marler Estates**	63	C	Conrad Hld	*	*		890511
483	**Tootal**	281	C	**Coats Viyella**	902	C		890515
484	**Anglo-Eastern Plantations**	14	C	**Chillington Corp.**	18	C		890516
485	**Antler**	10	I	**Wassall**	7	C		890516
486	**Molinaire Visions**	13	C	**Smith (W H)**	422	C	*	890522
487	Ketson	*	d	Moneytab	*	*		890522
488	**Laidlaw Thomson Grp**	8	C	**Newman Tonks Grp**	107	C	*	890522
489	Property Co. of London	*	d	Lodge Care	*	*		890524
490	**Coalite Grp**	323	C	**Anglo United**	55	I		890524
491	**UEI**	274	C	**Carlton Communications**	458	C		890602
492	**Juliana's Hld**	14	C	**Wembley**	94	C		890605
493	**Business Mortgages Trust**	8	C	**National Home Loans Hld**	97	C		890607
494	**Prospective Grp**	20	C	**Doctus**	10	C		890609
495	**Lyon & Lyon**	8	C	**Corton Beach**	23	I	*	890612
496	**Alida Holdings**	39	C	Scott & Robertson	*	*		890615
497	**Brookmount**	67	C	**Ford Sellar Morris Properties**	41	C	d	890616
498	**Parkdale Hld**	21	C	Pavilion Leisure	*	d		890619
499	Blair (George)	*	d	**Cook (William)**	22	C	*	890619
500	**Hunting Assoc. Inds.**	101	C	Hunting Gibson	*	*		890622
501	**Cons. Gold Fields**	2,806	C	**Hanson**	5,552	C	*	890623
502	Red Funnel	*	*	Sally UK Hld	*	*		890703
503	**Ward White**	235	C	**Boots**	2,137	C	I	890711
504	**BAT Inds.**	6,793	C	**Anglo Grp**	N.A.	*	I	890712
505	**Beacon Grp**	13	C	Anglo Invest.	*	*		890713
506	Tilbury Grp	*	*	**Lilley**	72	C		890714
507	**Illingworth Morris**	55	C	Log	*	*		890714
508	**Imry Merchant Devel.**	180	I	Marketchief	*	*		

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509	**Prestwich Hld**	42	C	Bealaw (236)	*	*	890714
510	**Stead & Simpson**	61	C	**Clayform Properties**	79	C	890718
511	**Arlington Securities**	126	I	**British Aerospace**	1,080	C	890719
512	**Hunting Petroleum Services**	31	C	Hunting Gibson	*	*	890719
513	**Myson Grp**	123	C	**Yale & Valor**	336	C	890721
514	**Goldberg (A)**	34	C	Black Leisure Grp	*	d	890731
515	London & Overseas Land	*	*	**Saville Gordon (J)**	41	C	890802
516	**Myson Grp**	123	C	**Blue Circle**	1,098	C	890802
517	**Smac Grp**	11	I	**Lookers**	28	C	890815
518	**De la Rue**	588	C	Norton Opax	*	d	890821
519	**UCL Grp**	10	I	Ferrari Hld	*	d	890823
520	**Avis Europe**	462	I	Cliva Hld	*	*	890825
521	**Textured Jersey**	5	C	Charterhall	*	d	890830
522	**Medminster**	8	C	Expedier Leisure	*	*	890831
523	Red Funnel	*	*	Assoc. British Ports Hld	*	*	890901
524	**Norton Opax**	220	C	**Bowater Inds.**	483	C	890904
525	**MIL Research Grp**	15	I	**MAI**	255	C	890906
526	**Miller & Santhouse**	31	I	**Boots**	2,137	C	890906
527	**TR Energy**	10	I	Europa Minerals	*	d	890906
528	**Broadcast Communications**	6	I	Guardian&Manch. Evening News	*	*	890911
529	**United Scientific Hld**	97	I	**Meggitt**	139	C	890911
530	**Armstrong Equipment**	87	C	**Caparo Grp**	20	C	890914
531	**Accord Publications**	5	C	**Pentland Grp (Inds.)**	195	C	890915
532	Meat Trade Suppliers	*	d	Twigrealm	*	*	890921
533	Lynx Grp	*	*	**Lynx Hld**	N.A.	I	890922
534	**Ruo Estates Hld**	5	C	Eastern Produce (Hld)	*	*	890929
535	**Caradon**	235	I	MB Grp	*	*	891003
536	**Neill (James) Hld**	75	C	MMG Patricof Europ. Buy-In Fund	*	*	891010
537	ITL Info. Tech.	*	*	Apricot Computers	*	*	891018
538	Ross Catherall Grp	*	d	**Vickers**	487	C	891024
539	**Highland Participants**	82	I	Cornwall Trust	*	*	891101
540	**Transrap**	8	I	**Sidlaw Grp**	38	C	891109
541	**Wade Potteries**	15	C	**Beauford**	16	C	891115
542	**Higgs & Hill**	129	C	**Lovell (YJ) Hld**	155	C	891120
543	**Scandinavian Bank Grp**	137	I	Scandinavian Invest.	*	*	891120
544	**Bardsey**	14	C	**Beckenham Grp**	21	I	891127
545	**Leisure Invest.**	166	C	Bear Brand	*	d	891130
546	**Metal Closures Grp**	52	C	**Wassall**	43	C	891130
547	Green (John) & Son	*	d	**Wace Grp**	163	C	891204
548	**Royal Sovereign Grp**	8	I	**Emess**	118	C	891204
549	**Dixons Grp**	617	C	**Kingfisher**	1,135	C	891206
550	KCA Drilling Grp	*	*	Outline	*	*	891207
551	**Hestair**	162	C	**BET**	1,913	C	891215
552	**VG Instruments**	142	C	**Fisons**	1,696	C	891218
553	Air Call (Hld.)	*	d	Healthcare Grp	*	*	891221
554	**Monotype Corp.**	63	C	Headington Invest.	*	*	891227
555	**Sanderson Murray & Elder**	5	C	Mr. Bramall	*	*	900103

APPENDIX B (Continued)

556	**Alexander (Walter)**	35	I	Spotlaunch	*	*	900117
557	**Mackay (Hugh)**	13	C	**Allied Textile Companies**	9	C	900118
558	**Internat. City Hld**	36	C	York Trust Grp	*	*	900119
559	**Saga Grp**	54	C	Saga Leisure	*	*	900119
560	**Norfolk Capital Grp**	149	C	**Queens Moat Houses**	606	C	900125
561	Colonnade Develop. Capital	*	*	**Stratagem Grp**	7	C	900126
562	Tavern Leisure	*	d	Millwall Hld	*	d	900126
563	**Jitra Rubber Plantations**	6	C	**Rowe Evans Invest.**	31	C	900131
564	**Chemoxy Internat.**	8	I	**MTM**	91	C	900202
565	**Really Useful Grp**	70	C	Jorraban (No 26)	*	*	900207
566	**Sketchley**	157	C	Davis (Godfrey) Hld	*	*	900212
567	**Just Rubber**	7	C	**Scapa**	282	C	900216
568	**Batleys**	15	C	Batley (L) Hld	*	*	900220
569	**Pericom**	3	C	**Ferrari Hld**	16	C	900220
570	**Paragon Communications**	7	I	**Shandwick**	90	C	900221
571	**Sac Internat.**	22	C	**Ricardo Grp**	18	C	900221
572	**Chemoxy Internat.**	8	I	**Suter**	212	C	900302
573	**Hatfield Estates**	13	I	**Lilley**	104	C	900305
574	**Sketchley**	157	C	**Compass Grp**	239	I	900308
575	**Regentcrest**	39	C	Wolverhampton	*	*	900315
576	**Western Motor Hld**	82	C	**Tozer Kemsley Millbourn**	287	C	900316
577	**Crystalate Hld**	37	C	**TT Grp**	61	C	900320
578	**Early's of Witney**	9	C	Grovewood Securities	*	d	900330
579	**Executex Clothes**	2	C	Premierflag	*	*	900330
580	**Pennant Grp**	2	I	**Mowat Grp**	49	I	900402
581	**Highland Electronics Grp**	7	C	**Arlen**	10	C	900406
582	**Hobsons Pulishing**	15	I	**Daily Mail & Gen. Trust**	334	C	900417
583	**Alumasc Grp**	29	C	**Glynwed Internat.**	613	C	900420
584	**Optim Grp**	3	I	Systems Reliability	*	*	900515
585	**Mecca Leisure Grp**	576	C	**Rank Organisation**	2,051	C	900601
586	Edinburgh Hibernian	*	*	Heart of Midlothian FC	*	*	900604
587	ADG Grp	*	d	Southwest Resources	*	*	900613
588	**Filofax Grp**	5	C	Transwood Consortium Fund	*	*	900626
589	**Fitch Lovell**	259	C	**Booker**	732	C	900717
590	Frost Grp	*	d	**Norfolkhouse Grp**	53	I	900720
591	**Yorkshire Radio Network**	16	I	**Metro Radio**	18	I	900723
592	**Unilock Hld**	14	C	**Yule Catto**	111	C	900726
593	**Parkway Grp**	49	I	**Wace Grp**	197	C	900801
594	**VPI Grp**	33	C	Tranwood Consortium Fund	*	*	900806
595	**Hughes, HT**	35	I	**Leigh Interests**	117	C	900918
596	**Caird Grp**	84	C	**Severn Trent**	1,001	I	900921
597	**Blackwood Hodge**	63	C	**BM Grp**	144	C	900925
598	**Connell**	46	C	Scottish Widows	*	*	900925
599	**Scott's Restaurant**	5	C	BS Grp	*	*	900928
600	**Chestergate Grp**	3	I	Farr	*	*	901003
601	**Foseco**	219	C	**Burmah Oil**	1,077	C	901015
602	Priest Marians Hld	*	d	Grovewood Securities	*	d	901017

APPENDIX B (Continued)

603	**Birmingham Mint Grp**	11	C	**IMI**	723	C	901022
604	**Auto. of Distinction**	6	I	Cargo Control	*	C*	901105
605	**McLaughlin & Harvey**	11	C	TBF Thompson Securities	*	**	901116
606	**BTS Grp**	6	C	**Waverley Cameron**	11	C	901203
607	**Colroy**	13	I	**Gleeson (MJ) Grp**	70	C	901203
608	**PML Grp**	7	C	Rapallo	*	C*	901206
609	**Rechem Environmental Svs.**	104	I	**Shanks & McEwan Grp**	266	I	901217
610	**Audit & General**	14	C	**West Indust.**	6	C	901221
611	**Telfos Hld**	52	C	**Cook (William)**	56	C	910108
612	**Touchstone Grp**	N.A.	C	**Stratagem Grp**	6	C	910108
613	Analysis Hld	*	d	Pearson	*	C*	910117
614	**Bardon Grp**	120	I	Evered	*	**	910123
615	**Yale & Valor**	366	C	**Williams Hld**	853	C	910131
616	**Thames Television**	243	C	**Thorn EMI**	2,258	C	910208
617	Ross Grp	*	d	Whittington	*	d	910301
618	**Tootal Grp**	266	C	**Coats Viyella**	673	C	910304
619	**Crosby (James) Grp**	10	C	**Berkeley Grp**	91	C	910322
620	**Logitec**	22	C	**Microvitec**	8	C	910325
621	**Frogmore Estates**	92	C	**Southend Property Hld**	68	C	910410
622	**Robertson Grp**	48	C	**Simon Engineering**	250	C	910411
623	**Magnetic Materials Grp**	8	C	**TT Grp**	73	C	910417
624	Cowan de Groot	*	*	**Wilton Grp**	6	C	910418
625	**Devenish (JA)**	65	C	**Boddington Grp**	133	C	910418
626	St James Estates	*	*	Anglo-Park Grp	*	C*	910418
627	**Harcourt Grp**	4	C	**Rutland Trust**	34	C	910507
626	**TMD Advertising Hld**	24	C	**Aegis Grp**	137	C	910507
629	**Radio City**	6	C	**EMAP**	258	C	910509
630	Cowan de Groot	*	*	**Bridgend Grp**	13	C	910510
631	**Quotient**	9	C	**ACT Grp**	52	C	910515
632	**Ibex Hld**	4	I	**Corporate Services Grp**	9	C	910517
633	**Macarthy**	39	C	**Grampian Hld**	78	C	910522
634	**Citybond Storage Svs.**	4	I	**Hays**	374	I	910523
635	**SD-Scicon**	75	C	**Cray Electronics**	31	C	910524
636	**Kingsgrange**	9	C	Matahari 374	*	C*	910531
637	**Tace**	19	C	Cambridge Electronic Ind.	*	**	910614
638	**API Grp**	18	C	**NMC Grp**	24	C	910620
639	**Davy Corp.**	149	C	**Trafalgar House**	956	C	910625
640	**Etam**	41	C	Oceana Invest. Corp.	*	Cd	910626
641	Mayfair	*	*	Cooper (Alan) Hld	*	d*	910701
642	**Wyndham Grp**	8	C	European Financ. Network Hld	*	**	910704
643	Thurgar Bardex	*	*	Heywood Williams Grp	*	d	910705
644	**Handley-Walker Grp**	6	C	P-E Internat.	*	dd	910711
645	**Macarthy**	37	C	Unichem	*	dd*	910711
646	**Bexbuild Developments**	4	I	Listcause	*	d	910715
647	**Ambassador Security Grp**	10	I	East Midland Electricity	*	dd	910717
648	**Sutherland Hld**	21	C	Hazlewood Foods	*	d	910729
649	**Copson, F**	2	C	Kanta Enterprises	*	*	910805

APPENDIX B (Continued)

650	**Macarthy**	37	C	Lloyds Chemists	*	d	910816
651	**Carbo**	23	C	Hopkinson Grp	*	d	910820
652	**Tyndall Hld**	15	C	Jupiter Tarbutt Merlin Hld	*	*	910820
653	**Lees (John J)**	4	C	Northumbrian Fine Foods	*	d	910821
654	**Cramphorn**	16	C	Wyevale Garden Centres	*	d	910823
655	**Rockware Grp**	86	C	BTR	*	d	910823
656	**Apollo Watch Products**	4	I	Time Products	*	d	910906
657	Flightspares	*	*	EIS Grp	*	d	910910
658	**Caparo Indust.**	49	C	Caparo Grp	*	*	910911
659	Dunstall Park Hld	*	*	**Triplex Lloyd**	44	C	910912
660	**Beazer**	281	C	Hanson	*	d	910916
661	**Torday & Carlisle**	15	I	Dowding & Mills	*	d	910916
662	**Racal Electronics**	2,238	C	Williams Hld	*	d	910917
663	**Douglas (Robert M)**	46	C	Tilbury Grp	*	d	910920
664	**Hawker Siddeley Grp**	869	C	BTR	*	d	910920
665	**Ultramar**	1,173	C	Lasmo	*	d	911017
666	**Malaya Grp**	1	I	Giltrap Motor Hld	*	*	911024
667	**New England Properties**	10	C	TR Property Inv.Trust	*	d	911115
668	**Ritz Design Grp**	11	C	Stirling Grp	*	d	911128
669	**Baker H. Saunders Grp**	7	C	Herring Son & Daw Hld	*	*	911210

Sample size:	**CAPM**	**442**	**Sample size:**	**CAPM**	**361**
	MM	**442**		**MM**	**361**
	IM	**568**		**IM**	**414**
Market value:	**Mean[A]**	**103**	**Market value:**	**Mean[A]**	**503**
	St.Dev	**381**		**St.Dev**	**1,232**

Notes to the table:

A The market capitalisation of the target and bidding companies was obtained from the quarterly issue of the London Business School Risk Measurement Service (LBS RMS) dating 6 to 9 months prior to the month of the bid announcement. For a few companies, the market capitalisation was not available from the LBS RMS. In these circumstances, the market capitalisation has been obtained from Datastream. For four target companies and five bidding companies was it not possible to obtain data on the market capitalisation 6-9 months prior to the bid announcement from either source. The mean and standard deviation of the target company market capitalisation is therefore calculated on the basis of 564 target and 409 bidding companies. (Information on market capitalisation is only given for companies included in the analysis).

B "Sapmle" refers to which tests were carried out on the company in question. This varied with data availability. "C" refers to the Capital Asset Pricing Model (CAPM). The "C" companies were also included in the Market Model (MM) and Index Model (IM) analysis. "M" refers to MM. These companies were also included in the IM analysis, but not in CAPM. Lastly, "I" companies were only included in the IM analysis. For companies marked "d", insufficient data was available for any kind of analysis, and companies marked "*" were not included in the Datastream database.

APPENDIX C

CORRELATION MATRICES FOR THE EXPLANATORY VARIABLES IN THE CROSS-SECTIONAL ANALYSIS

Table C.1

UK Target Companies in Cross-Border Acquisitions

Variables as defined in Table 7.3.

	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Competitive	0.494					
Revised	0.185	0.300				
Pay	-0.085	0.096	-0.020			
Stake	0.095	-0.154	0.084	0.010		
Rel Size	0.307	-0.065	-0.048	-0.702	-0.118	
Size	0.230	0.165	0.194	-0.158	0.181	0.020

Table C.2

UK Target Companies in Domestic Acquisitions

Variables as defined in Table 7.7.

	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Competitive	0.391					
Revised	0.099	0.198				
Pay	-0.095	0.039	0.068			
Stake	-0.047	-0.037	0.088	0.081		
Rel Size	0.113	-0.014	-0.015	-0.082	-0.030	
Size	0.172	0.117	0.156	-0.100	0.066	0.163

Table C.3

UK Target Companies in Cross-Border and Domestic Acquisitions (Target Company Cross-Border Effect)

Variables as defined in Table 7.11.

	Natio-nality	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Outcome	0.012						
Comp.	0.078	0.414					
Revised	0.033	0.118	0.225				
Pay	0.279	-0.083	0.062	0.064			
Stake	0.169	-0.012	-0.053	0.091	0.113		
Rel Size	0.117	0.117	-0.024	-0.023	-0.091	-0.038	
Size	0.122	0.183	0.134	0.165	-0.063	0.111	0.059

Table C.4

Overseas Bidding Companies in Cross-Border Acquisitions

Variables as defined in Table 8.3.

	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Competitive	0.343					
Revised	-0.042	0.383				
Pay	-0.092	0.104	0.075			
Stake	-0.005	-0.137	-0.034	0.180		
Rel Size	0.307	-0.065	-0.053	-0.702	-0.118	
Size	-0.155	0.029	0.031	0.326	0.028	-0.637

Table C.5

Domestic UK Bidding Companies in Domestic Acquisitions

Variables as defined in Table 8.8.

	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Competitive	0.364					
Revised	0.122	0.198				
Pay	-0.082	-0.010	0.054			
Stake	-0.004	-0.003	0.107	0.038		
Rel Size	0.117	-0.017	-0.016	-0.086	-0.032	
Size	-0.038	-0.012	0.009	0.214	0.094	-0.142

Table C.6

Bidding Companies in Cross-Border and Domestic UK Acquisitions (Bidding Company Cross-Border Effect)

Variables as defined in Table 8.13.

	Natio-nality	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Outcome	-0.038						
Comp.	0.062	0.356					
Revised	-0.033	0.102	0.223				
Pay	0.223	-0.088	0.014	0.045			
Stake	0.133	-0.009	-0.019	0.080	0.077		
Rel Size	0.117	0.119	-0.024	-0.024	-0.092	-0.038	
Size	0.337	-0.065	0.016	0.000	0.276	0.122	-0.223

Table C.7

UK Target Companies and Overseas Bidding Companies in Cross-Border Acquisitions (Cross-Border Acquisitions)

Variables as defined in Table 9.3.

	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Competitive	0.330					
Revised	-0.050	0.413				
Pay	-0.164	0.097	0.076			
Stake	0.003	-0.240	-0.018	0.153		
Rel Size	0.307	-0.065	-0.053	-0.702	-0.118	
Size	-0.089	0.092	0.008	0.343	0.029	-0.290

Table C.8

UK Target Companies and Domestic Bidding Companies in Domestic UK Acquisitions (Domestic Acquisitions)

Variables as defined in Table 9.7.

	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Competitive	0.361					
Revised	0.111	0.196				
Pay	-0.100	0.009	0.064			
Stake	-0.002	-0.008	0.114	0.034		
Rel Size	0.116	-0.017	-0.015	-0.085	-0.030	
Size	0.010	0.045	0.010	0.171	0.105	0.032

Table C.9

Target and Bidding Companies in Cross-Border and Domestic Acquisitions (Total Cross-Border Effect)

Variables as defined in Table 9.11.

	Natio-nality	Outcome	Comp.	Revised	Pay	Stake	Rel Size
Outcome	-0.035						
Comp.	0.061	0.352					
Revised	-0.015	0.092	0.226				
Pay	0.240	-0.107	0.029	0.057			
Stake	0.106	-0.005	-0.040	0.092	0.064		
Rel Size	0.117	0.119	-0.024	-0.023	-0.092	-0.038	
Size	0.359	-0.017	0.016	0.000	0.244	0.130	-0.036

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